

MZ • MV

SERIES

TECHNICAL MANUAL

RISO MZ 7 Series
RISO MV 7 Series
RISO MZ 9 Series

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IMPORTANT PRECAUTIONS

- Always disconnect the power plug before performing maintenance work.
- Be careful to avoid getting neckties, clothing, long hair, or similar articles caught in moving or rotating parts.
- Exercise extreme caution if you must work on the machine while power is on.
- Never work on the machine while it is operating.
- Be careful to avoid injuries caused by springs or sharp edges of sheet metal.

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MEMO

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Preface

This manual provides Technical Service Information for the **RISO PRINTER models MZ and MV series**.

This manual provides procedures for removing and installing major components. Following these procedures will minimize machine malfunctions. This information within the manual will also increase technical representatives' awareness and experience regarding repairs necessary to insure end-user satisfaction.

1. Work Precautions

When conducting maintenance work, be careful to avoid injury caused by springs or the sharp edges of sheet metal.

Inspection

If you discover any defects or problems during an inspection, fix the problems or if necessary take steps such as replacing a part.

Removal

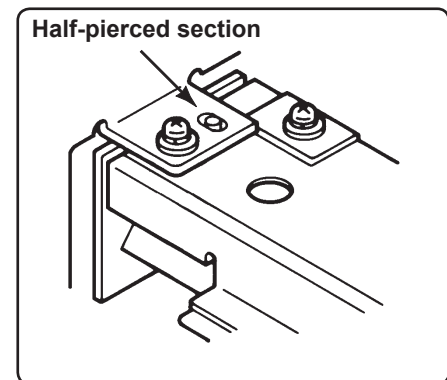
Check the problem area. At the same time, examine the cause of the problem and determine whether the part needs to be removed or disassembled. Next proceed according to the procedures presented in the Technical Manual. In cases where, for example, it is necessary to disassemble areas with large numbers of parts, parts which are similar to each other, or parts which are the same on the left and right, sort the parts so that you do not mix them up during reassembly.

- (1) Carefully sort the removed parts.
- (2) Distinguish between parts which are being replaced and those which will be reused.
- (3) When replacing screws, etc., be sure to use the specified sizes.

Assembly and Installation

Unless specified otherwise, perform the removal procedures in reverse during assembly and installation. In cases where protrusions or holes are provided to assist in positioning parts, use them for accurate positioning and securing.

(Protrusions and holes for positioning parts → Half pierced section)



0101

Tools

Using tools other than those specified can lead to injury or damage screws and parts. Have all the tools necessary for the work available.

[Standard Tool list]

Type	Tip size	Shaft length, etc.
Phillips screwdriver	No. 2	(250 mm)
	No. 2	(100 mm–150 mm)
	No. 2	(stubby type)
	No. 1	(75 mm–100 mm)
Standard screwdriver	6 mm	(100 mm–150 mm)
	3 mm	(100 mm–150 mm)
	1.8 mm	(precision type)
Nut driver (box driver)	8 mm	(100 mm–150 mm)
	7 mm	(100 mm–150 mm)
High frequency driver	2.5 mm	
Spanners	5 mm	5.5 mm 7 mm
	8 mm	10 mm 13 mm
	Monkey	
Hex wrenches	5.0 mm	4.0 mm 3.0 mm
	2.5 mm	2.0 mm 1.5 mm
	(For 3.0mm, 2 pieces required)	

Type	Remarks
Steel scale	150 mm
Feeler gauge	
Radial cutting pliers	
Pliers	
Nipper	
Small flashlight	
Multimeter	
Soldering iron	20 W–30 W
File	Flat, round

0103

0102

CAUTION

[Handling of Lithium Battery]

- **Never fail to follow the following instructions when you discard the used lithium battery.**

1. **Never let the battery short-circuited.**

If the (+) and (-) terminals contact each other or metal materials, the battery will be short-circuited. If the batteries are collected and stored in disorderly or one upon another, the above-mentioned case will occur.

- **DANGER -**

If the battery is short-circuited, it will heat up and may in some cases explode into fire.

2. **Never heat up the battery.**

- **DANGER -**

If you heat the battery up to more than 100 degrees Celsius or put it into the fire, it may burn dangerously or explode.

3. **Never disassemble the battery or press it into deformation.**

- **DANGER -**

If you disassemble the battery, the gas pouring out of the inside may hurt your throat or the negative lithium may heat up into fire.

If the battery is pressed into deformation, the liquid inside may leak out of the sealed part or the battery may be short-circuited inside and explode.

4. **Never fail to keep the battery out of reach of children.**

If you put the battery within reach of children, they may swallow it down.

Should they swallow the battery, immediately consult the doctor.

[Replacement of the Lithium Battery]

1. **The lithium battery must be replaced by a trained and authorized service technician.**
2. **The battery must be replaced only with the same or equivalent type recommended by the manufacturer.**
3. **Discard used batteries according to the manufacturer's instructions.**

< Ref: Perchlorate Best Management Practices regulation in U.S.A. >

Perchlorate Material-special handling may apply,

See www.dtsc.ca.gov/hazardouswaste/perchlorate

This product may contain certain substances which are restricted when disposed.

Therefore, be sure to consult your contracted service dealer.

!! WARNING !!

Important Safety Precautions

1. Always disconnect electrical supply before placing hands in the machine.

I. To avoid injuries:

Be sure to disconnect the electrical power before disassembling, assembling, or when making adjustments on the machine.

II. Protection of the machine:

Make sure to turn OFF the power to the machine before plugging or unplugging the electrical connectors, or when connecting a Meter.

2. WARNING:

The back light tube of LCD of the Control Panel on this Model contains mercury which must be recycled or disposed of as hazardous waste.

3. Always connect electrical connectors firmly.

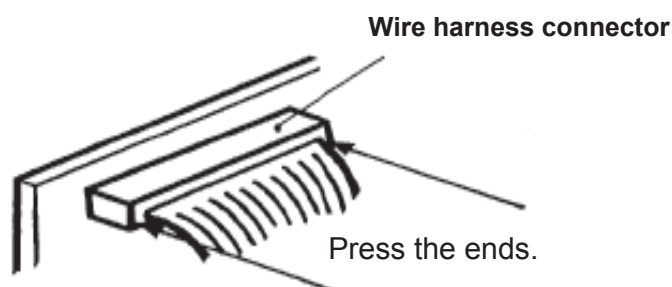
I. To avoid electrical failure:

The connectors must be connected firmly together and onto the PCBs.
Press on the ends of the connectors and then on the middle to ensure a firm fit.

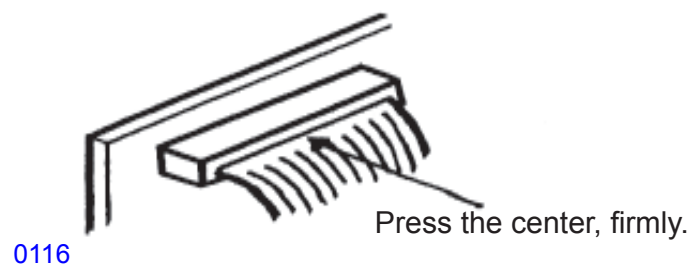
II. Protection of the electrical components:

The electrical components may be damaged due to short circuits caused by a loose connector.

FIRST



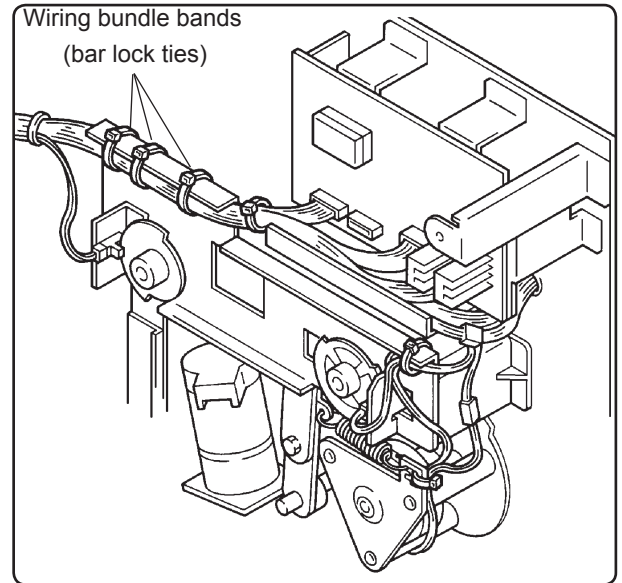
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Electrical system work

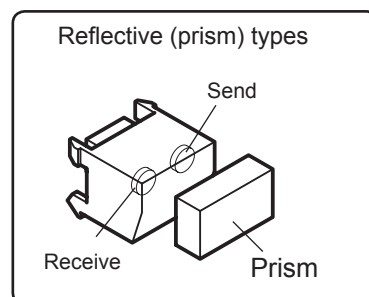
- After removing wire bundles, fasten them with wire bundle bands (bar lock ties) so that they will not sag.
- When installing parts, be careful to avoid pinching or damaging the wire bundles.
- If a fuse blows, always replace it with one with the specified capacity.
- Using a fuse with a larger capacity can not only damage parts, but may cause fires.
- Be careful not to drop image scanners, thermal print heads, and other sensors as they can be easily damaged.



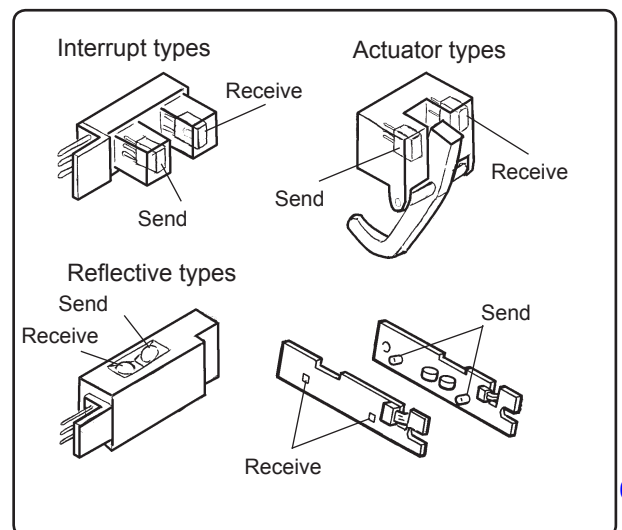
0104

Sensor types

- Photoelectric sensors may be broadly divided into the following four types: interrupt types (U-shaped), actuator types, reflective types, and transmissive types.
- Magnetic sensors use Hall ICs, which react to the magnetic force in magnets.
- Always turn off the power before plugging or unplugging sensor connectors.



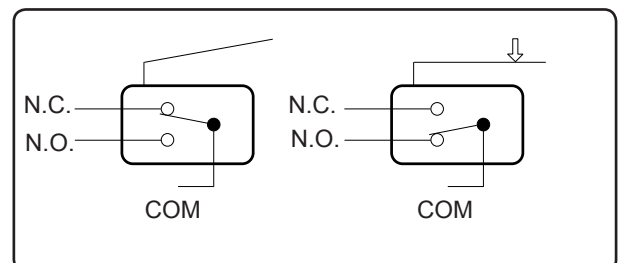
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Switch types

- Microswitches may be divided between normally open (N.O.) types and normally closed (N.C.) types. With an N.O. connection, an internal contact is connected when the switch actuator is pressed. With an N.C. connection, an internal contact is disconnected when the switch actuator is pressed.



0107

Note

The machine is comprised of many gears. When inspecting or replacing parts, apply grease to the gears. If they are not properly greased, the gears may make abnormal sounds, and malfunctions or mechanical problems may occur.

Installation location

Do not install the machine in any of the following locations.

- (1) Those subject to direct sunlight or any bright location such as by a window (If you must install in such a location, put a curtain or the like over the window.).
- (2) Those where the temperature changes drastically.
- (3) Those that are too hot, cold, humid, or dry.

RECOMMENDED:

Temperature range: 15 degrees Celsius - 30 degrees Celsius

Humidity range: 40% - 70% No condensation allowed

- (4) Those with radiant heat sources and any locations in the direct path of air from air conditioners or heaters.
- (5) Any poorly ventilated location.
- (6) Dusty atmosphere.
- (7) Any tilted location.

(Installation height difference: 10 mm max. front - rear, 10 mm max. left - right).

Electrical connection

- Plug the plug securely into the socket so that there is no problem with the contact in the power supply plug section.
- Do not use any triplets or extension cords.
- Do not allow any other machine to stand on or crush the power cord.

Ground connection

- Always ground this machine to prevent electrical shock in case of an electrical leakage.

Never connect the ground wire to any of the following:

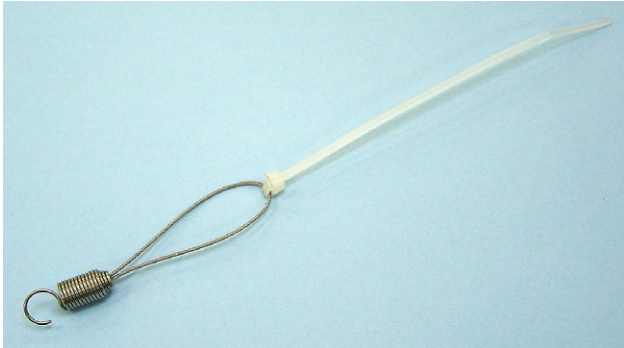
Gas pipe

Ground wire for telephone

Lightening rod

Water supply pipe or faucet with plastic pipe used at one or more sections

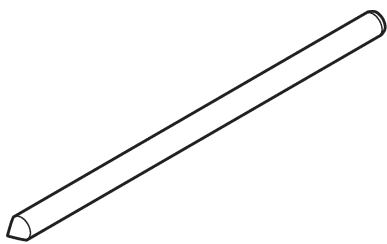
2. JIGs



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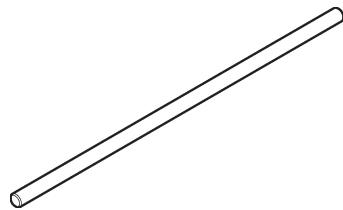
021-16007-005 Spring; Screen (2 pieces required)

Cut the ring end to make into hook, as shown on the photograph, and attach wire tie bar on the other end.



0109

016-16141-003 8mm Dia. x 160mm Shaft (JIG)
(2 pieces required)



0110

Jig: 4 mm (Dia.) x 120 mm (Length)
024-75064-006

Note:

The part numbers are subject to change without notice.

3. Removing Exterior Covers

Front cover

- (1) Open the front cover, loosen the mounting screw on the upper hinge assembly, then lower and remove the front cover.

Cover (front lower)

- (1) Remove the front cover.
- (2) Remove the mounting screws (bind, M4 x 8, 2 pcs), then remove the cover (front lower).

Cover (front left)

- (1) Remove the front cover.
- (2) Remove the mounting screws (bind, M4 x 8, 5 pcs), then remove the cover (front left).

Cover (front right)

- (1) Remove the front cover.
- (2) Remove the mounting screws (bind, M4 x 8, 5 pcs), then remove the cover (front right).

Panel case

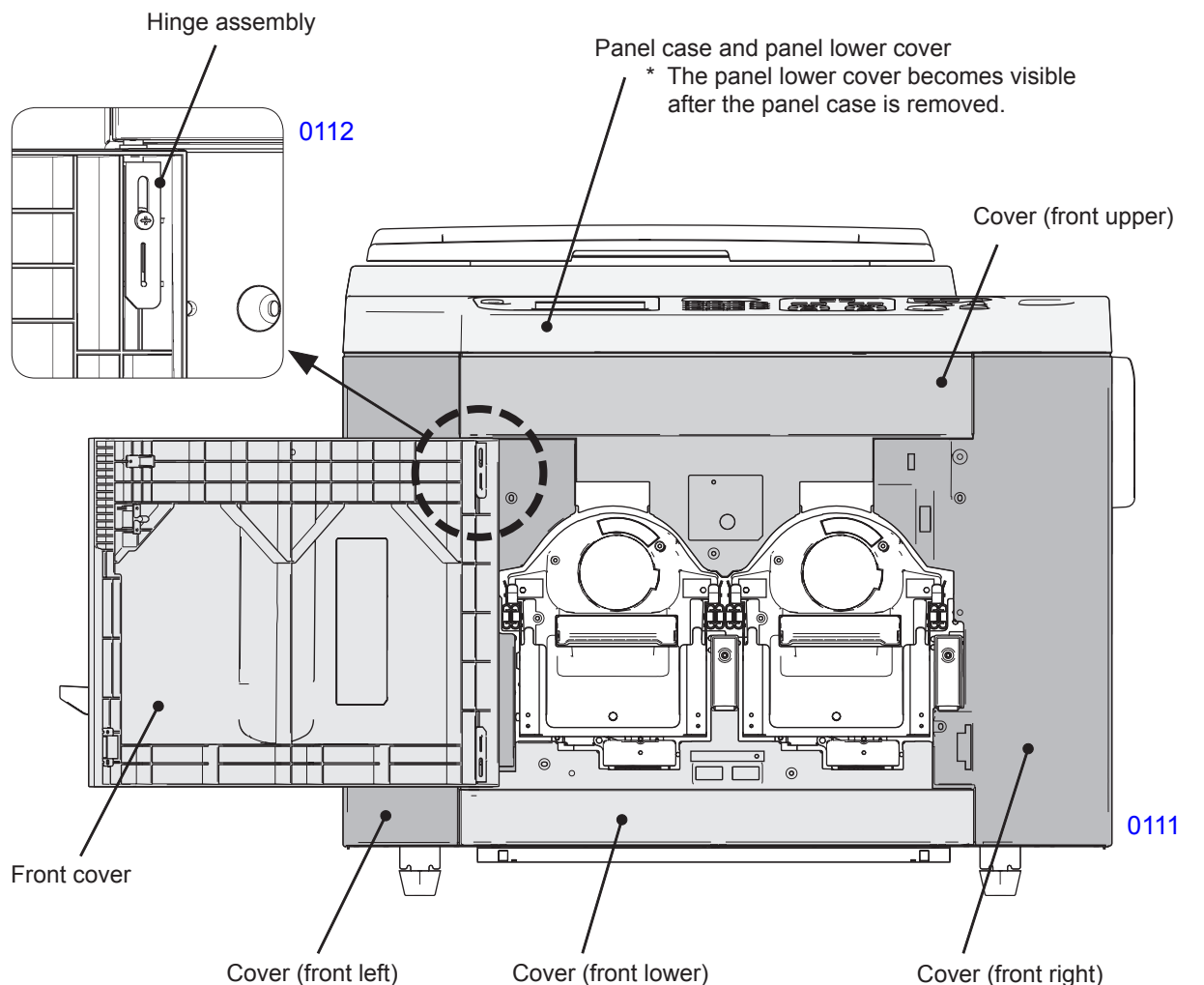
- (1) Remove the mounting screws (bind, M4 x 8, 3 pcs), disconnect the connector, then remove the panel case.

Panel lower cover

- (1) Remove the front cover, cover (front left), cover (front right), and panel case.
- (2) Remove the mounting screws (with double-washer, M4 x 8, 3 pcs), then remove the panel lower cover.

Cover (front upper)

- (1) Remove the front cover, cover (front left), cover (front right), panel case, and panel lower cover.
- (2) Remove the mounting screw (bind, M4 x 8, 1 pc), then remove the cover (front upper).



Stage cover

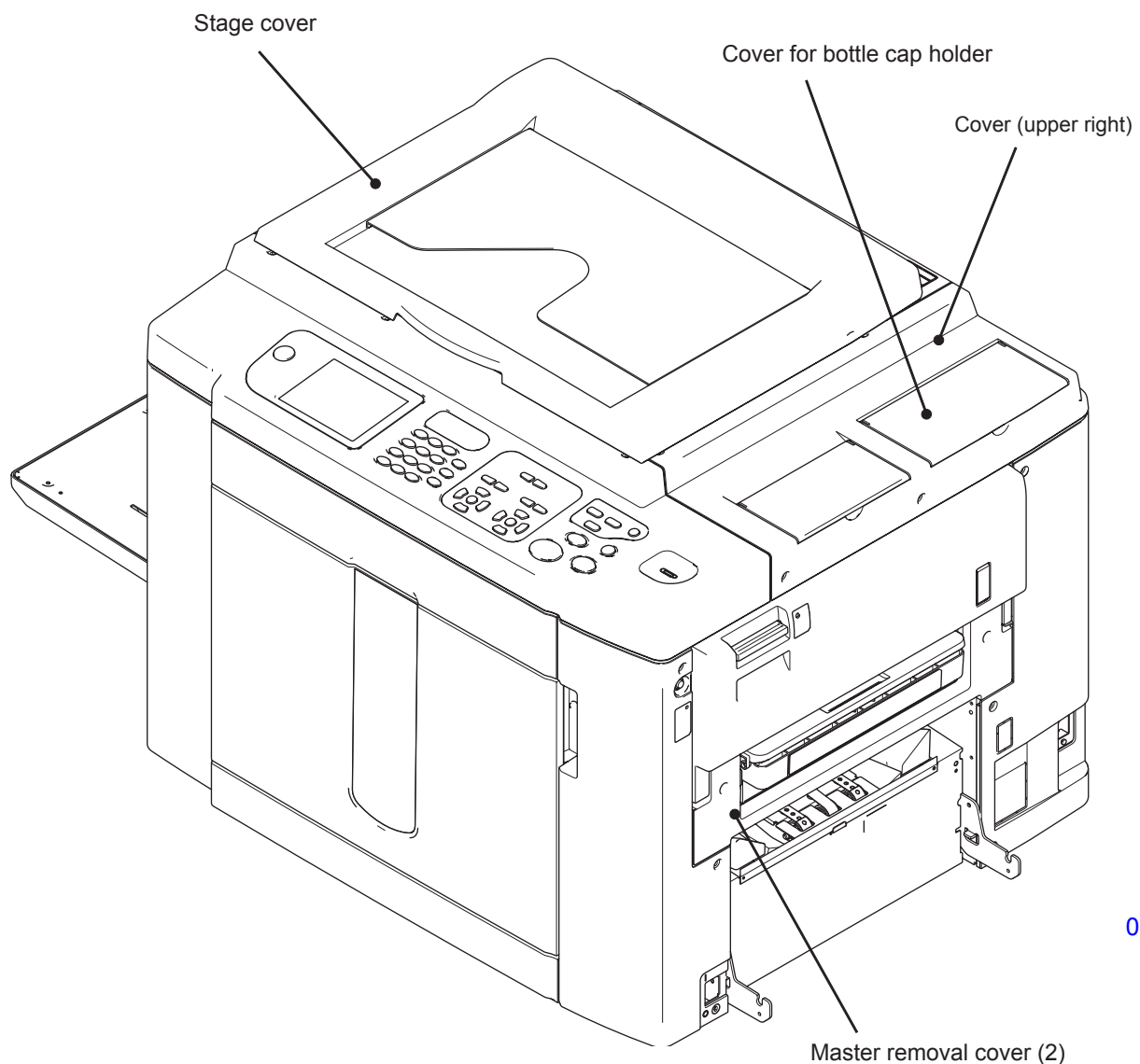
- (1) Open the stage cover. Remove the mounting screws (bind, M4 x 10, 1 pc each) from the hinge sections (one each on the right and left sides), and temporarily install them in the holes in the back side. Then remove the stage cover.

Cover (upper right)

- (1) Remove the mounting screws (bind, M4 x 8, 6 pcs), then remove the cover (upper right).
 - * To remove one of the six mounting screws, you must first open the cover of the bottle cap holder.

Master removal cover (2)

- (1) Remove the mounting screws (bind, M4 x 8, 2 pcs), then remove the master removal cover (2).



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Cover (rear left)

- (1) Remove the mounting screws (bind, M4 x 8, 5 pcs), then remove the cover (rear left).

Cover (rear right)

- (1) Remove the mounting screws (bind, M4 x 8, 6 pcs), then remove the cover (rear right).

Master removal cover (1)

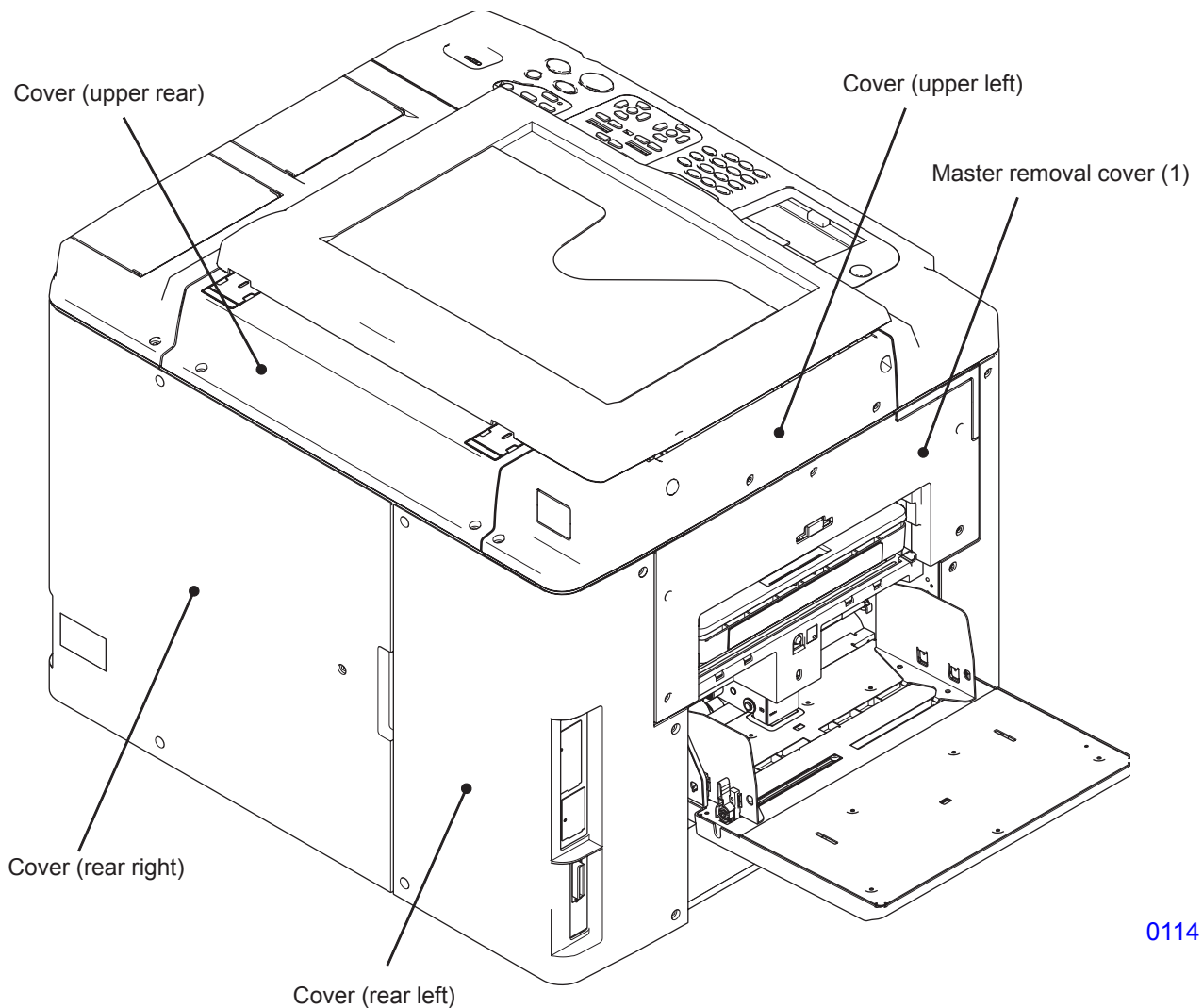
- (1) Remove the mounting screws (bind, M4 x 8, 5 pcs), then remove the master removal cover (1).

Cover (upper left)

- (1) Remove the mounting screws (bind, M4 x 8, 5 pcs), then remove the cover (upper left).

Cover (upper rear)

- (1) Remove the stage cover, the cover (upper right), and the cover (upper left).
- (2) Remove the mounting screws (bind, M4 x 8, 4 pcs), then remove the cover (upper rear).



0114

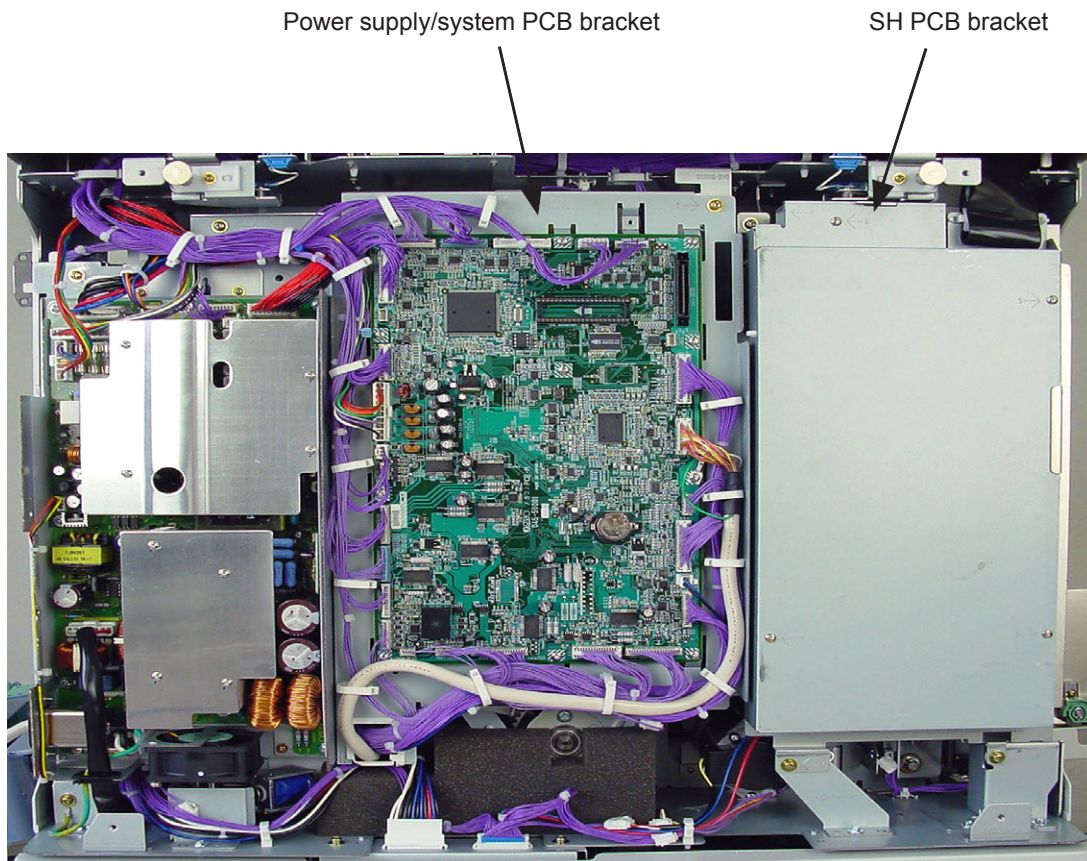
4. Opening the SH PCB Bracket and Power Supply/System PCB Bracket

Opening the SH PCB bracket

- (1) Turn off power and remove the cover (rear left).
- (2) Remove the mounting screws (with double-washer, M4 x 8, 3 pcs) and open the SH PCB bracket.

Opening the power supply/system PCB bracket

- (1) Turn off power.
- (2) Remove the mounting screws (with double-washer, M4 x 8, 5 pcs) and open the power supply/system PCB bracket.



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CHAPTER 2: MACHINE SUMMARY

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1. Machine Specifications

Optional Accessories for MZ 770 & 790 Series (excludes MV7 Series)

Optional Accessories

A variety of optional accessories are available to enhance the capabilities of the machine. For details about the optional accessories, see your dealer (or authorized service representative).

◆ Auto Document Feeder AF-VI:II

Feed up to 50 sheets of originals automatically.

◆ Auto Document Feeder DX-1

Feed up to 50 sheets of originals automatically. Both sides of original can be scanned automatically.

◆ Color Cylinder (Drum)

Simply change the Cylinder (Drum) to print in multiple colors. (Case included)

◆ Key Card Counter

With a single button press, shows the numbers of printed copies and consumed masters within a given period of time. This can help you manage costs.

◆ Job Separator

With the Programed Printing function, allows the machine to print and sort into groups separated by tape.

◆ Stand

◆ RISO PRINTER Network Interface Card RISORINC-NET-D:G/GII

Use to directly connect the machine to the network.

This comes with the RISO-MONITOR software that allows you to check the status of the machine from computers.

◆ Special Paper Feed Kit

This unit allows you to feed thicker paper such as cards and envelopes.

◆ Ink/Master Holder

A rack kit for storing supply such as ink and masters.

◆ Document Storage Card DM-128CF

◆ Wide Stacking Tray

Paper Receiving Tray for sizes A6 - A3/Ledger 13.4" × 18.5" (340mm × 470mm).

◆ RISO Color Separation Software CS-2000

Easy to use application software for printing multi-colored, computer-generated images on your RISO printer.

◆ RISO Controller PS7R

A custom controller enabling the machine to be used as a network-connected PostScript 3 printer.

RISO MZ770

Master-making/printing methods	High-speed digital master-making/full automatic stencil printing
Original Type	Book (10 kg or less), sheet
Original Size (max./min.)	When using the Platen Glass : 50 mm × 90 mm - 297 mm × 432 mm When using the Auto Document Feeder AF-VI:II (option) : 90 mm × 140 mm - 297 mm × 432 mm When using Auto Document Feeder DX-1 (option) : 105 mm × 128 mm - 297 mm × 432 mm
Original Paper Weight	When using the Platen Glass : 10 kg or less When using the Auto Document Feeder AF-VI:II (option) : 50g/m ² - 128g/m ² When using Auto Document Feeder DX-1 (option) : 40g/m ² - 128g/m ² (When "Scanning Side -ADF" is set to "Back Side → Simplex" or "Duplex → Simplex" : 52g/m ² - 105g/m ²)
Print Paper Size (max./min.)	When simultaneously 2-Colour printing: 182 mm × 257 mm - 297 mm × 432 mm When 1-Colour printing (using Drum 1): 100mm × 148mm - 297mm × 432mm When 1-Colour printing (using Drum 2): 182 mm × 257 mm - 297 mm × 432 mm
Paper Supply Capacity	1000 sheets (64 g/m ²)
Print Paper Weight	46g/m ² - 210g/m ²
Image Processing mode	Line, Photo (Standard/Portrait/Group), Duo, Pencil
Master-making Time (for A4/portrait/100% reproduction ratio)	Approx. 57 seconds (for dual-colour print) Approx. 24 seconds (for single-colour print (Drum 1)) Approx. 34 seconds (for single-colour print (Drum 2))
Printing Area (max.)	291mm × 413mm
Print Reproduction Ratio	Zoom : 50 - 200% Standard reproduction ratio (enlargement) : 163%, 141%, 122%, 116% Standard reproduction ratio (reduction) : 87%, 82%, 71%, 61% Margin+ : 90 - 99 %
Print Speed	Approx. 60 - 150 sheets per minute (Control panel: five steps variable, touch panel: 150ppm)
Print Position Adjustment	Vertical : ±15mm Horizontal : ±10mm
Ink Supply	Full automatic (1000 ml per cartridge)
Master Supply/Disposal	Full automatic (approx. 220 sheets per roll)
Master Disposal Capacity	80 sheets
User Interface	LCD Touch Panel with Progress Arrow indicators, front-side operation
Optional Accessories	Auto Document Feeder AF-VI:II, Auto Document Feeder DX-1, Job Separator, Key Card Counter, Colour Drum, Network Interface Card RISORINC-NET-D:G/GII, Special Paper Feed Kit, Stand, Document Storage Card DM-128CF, Wide Stacking Tray, RISO Colour Separation Software CS-2000, RISO Controller PS7R
Power Source	MZ770E : 220V-240V AC, 50/60Hz <3.0A>
Dimensions	When in use : 1605mm(W) × 725mm(D) × 730mm(H) When in storage : 1010mm(W) × 725mm(D) × 730mm(H)
Weight	Approx. 168 kg

Note:

- Please note that due to improvements and changes to the machine, some images and explanations in this manual may not correspond to your machine.
- The specifications are subject to change without prior notice.

RISO MZ790

Master-making/printing methods	High-speed digital master-making/full automatic stencil printing
Original Type	Book (22 lb (10 kg) or less), sheet
Original Size (max./min.)	When using the Stage Glass : $11\frac{15}{16}" \times 3\frac{9}{16}"$ (50 mm $\times$ 90 mm) - $11\frac{11}{16}" \times 17"$ (297 mm $\times$ 432 mm) When using Auto Document Feeder AF-VI:II (option) : $3\frac{9}{16}" \times 5\frac{1}{2}"$ (90 mm $\times$ 140 mm) - $11\frac{11}{16}" \times 17"$ (297 mm $\times$ 432 mm) When using Auto Document Feeder DX-1(option) : $3\frac{29}{32}" \times 4\frac{25}{32}"$ (105 mm $\times$ 128 mm) - $11\frac{11}{16}" \times 17"$ (297 mm $\times$ 432 mm)
Original Paper Weight	When using the Stage Glass : 22 lb (10 kg) or less When using the Auto Document Feeder AF-VI:II (option) : 13-lb bond (50g/m ²) - 34-lb bond (128g/m ²) When using Auto Document Feeder DX-1 (option) : 11-lb bond (40g/m ²) - 34-lb bond (128g/m ²) (When "Scanning Side -ADF" is set to "Back Side → Simplex" or "Duplex → Simplex" : 14-lb bond (52g/m ²) - 28-lb bond (105g/m ²))
Print Paper Size (max./min.)	When simultaneously 2-Color printing: $7\frac{3}{16}" \times 10\frac{1}{8}"$ (182 mm $\times$ 257 mm) - $11\frac{11}{16}" \times 17"$ (297mm $\times$ 432mm) When 1-Color printing (using Cylinder (Drum) 1): $3\frac{15}{16}" \times 5\frac{13}{16}"$ (100mm $\times$ 148mm) - $11\frac{11}{16}" \times 17"$ (297mm $\times$ 432mm) When 1-Color printing (using Cylinder (Drum) 2): $7\frac{3}{16}" \times 10\frac{1}{8}"$ (182 mm $\times$ 257 mm) - $11\frac{11}{16}" \times 17"$ (297mm $\times$ 432mm)
Paper Supply Capacity	1000 sheets (17-lb bond (64 g/m ²))
Print Paper Weight	13-lb bond (46g/m ²) - 110-lb index (210g/m ²)
Image Processing mode	Line, Photo (Standard/Portrait/Group), Duo, Pencil
Master-making Time (for A4/portrait/100% reproduction ratio)	Approx. 57 seconds (for dual-color print) Approx. 24 seconds (for single-color print (Cylinder (Drum) 1)) Approx. 34 seconds (for single-color print (Cylinder (Drum) 2))
Printing Area (max.)	$11\frac{7}{16}" \times 16\frac{3}{4}"$ (291mm $\times$ 425mm)
Print Reproduction Ratio	Zoom : 50 - 200% Standard reproduction ratio (enlargement) : 200%, 154%, 129%, 121% Standard reproduction ratio (reduction) : 78%, 65%, 61%, 50% Margin+ : 90 - 99 %
Print Speed	Approx. 60 - 150 sheets per minute (Control panel: five steps variable, touch panel: 150ppm)
Print Position Adjustment	Vertical : $\pm 1\frac{9}{32}"$ (± 15 mm) Horizontal : $\pm \frac{3}{8}"$ (± 10 mm)
Ink Supply	Full automatic (1000 ml per cartridge)
Master Supply/Disposal	Full automatic (approx. 220 sheets per roll)
Master Disposal Capacity	80 sheets
User Interface	LCD Touch Panel with Progress Arrow indicators, front-side operation

Optional Accessories	Auto Document Feeder AF-VI:II, Auto Document Feeder DX-1, Job Separator, Key Card Counter, Color Cylinder (Drum), Network Interface Card RISORINC-NET-D:G/GII, Special Paper Feed Kit, Stand, Document Storage Card DM-128CF, Wide Stacking Tray, RISO Color Separation Software CS-2000, RISO Controller PS7R
Power Source	MZ790U : 100V-120V / 220V-240V AC, 50/60Hz <7.3/3.0A>
Dimensions	When in use : $63\frac{3}{16}"(W) \times 28\frac{9}{16}"(D) \times 28\frac{3}{4}"(H)$ (1605mm(W) $\times$ 725mm(D) $\times$ 730mm(H)) When in storage : $39\frac{3}{4}"(W) \times 28\frac{9}{16}"(D) \times 28\frac{3}{4}"(H)$ (1010mm(W) $\times$ 725mm(D) $\times$ 730mm(H))
Weight	Approx. 370 $\frac{1}{16}$ lb (168 kg)

Note:

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- The specifications are subject to change without prior notice.

Optional Accessories for MV 7690 Series (excludes MZ7 Series)

选购附件

有各种各样的选购附件可用于增强本机功能。

如需了解有关选购附件的详情，请联系您的经销商（或授权维修中心）。

◆ 自动进稿机 AF-VI:II

可自动供给多达 50 张原稿。

◆ 自动进稿机 DX-1

可自动供给多达 50 张原稿。原稿的两面可以自动扫描。

◆ 彩色滚筒

只需更换滚筒便可多种颜色印刷。（包含外壳）

◆ 磁卡计数器

只要按一个键，即可显示指定时间段内的印刷量与版纸消耗量。这有助于成本管理。

◆ 分页机

使用编程印刷功能，可供本机进行印刷并以胶带分页成组。

◆ 撑脚

◆ 理想速印机网卡 RISORINC-NET-D:G/GII

用于直接将本机接入网络。

此附件附带 RISO-MONITOR 软件，可用于从计算机检查本机状态。

◆ 特殊纸张进纸组件

通过本机组可以送入较厚的纸张，如卡片与信封。

◆ 油墨 / 版纸支架

用于储存储备件（如油墨与版纸）的支架组件。

◆ 宽型堆垛盒

对应 A6 - A3 尺寸的出纸盒 / Ledger（340 mm × 479 mm）。

◆ 理想控制器 PS7R

自选控制器，可以使本机用作网络连接的 PostScript 3 速印机。

技术规格

RISO MV7690

制版 / 印刷方法	高速数字制版 / 全自动模版印刷
原稿类型	书本（10 kg 或以下）、稿纸
原稿尺寸（最大 / 最小）	使用扫描台玻璃时：50 mm × 90 mm - 297 mm × 432 mm 使用自动进稿机 AF-VI:II（选购件）时：90 mm × 140 mm - 297 mm × 432 mm 使用自动进稿机 DX-1（选购件）时：105 mm × 128 mm - 297 mm × 432 mm
原稿纸张重量	使用扫描台玻璃时：10 kg 或以下 使用自动进稿机 AF-VI:II（选购件）时：50 g/m ² - 128 g/m ² 使用自动进稿机 DX-1（选购件）时：40 g/m ² - 128 g/m ² （“扫描侧 ADF”设定为“背面 → 单面”或“双面 → 单面”：52 g/m ² - 105 g/m ² ）
印刷纸张尺寸（最大 / 最小）	双色印刷时： 182 mm × 257 mm - 297 mm × 432 mm 单色印刷时（用滚筒 1）： 100 mm × 148 mm - 297 mm × 432 mm 单色印刷时（用滚筒 2）： 182 mm × 257 mm - 297 mm × 432 mm
进纸容量	1000 张（64 g/m ² ）
印刷纸张重量	46 g/m ² - 210 g/m ²
图像处理模式	文字、照片（标准 / 肖像 / 群组）、图文、铅笔
制版时间 （对于 A4/ 肖像 / 100% 缩放比率）	约 57 秒（双色印刷） 约 24 秒（单色印刷（滚筒 1）） 约 34 秒（单色印刷（滚筒 2））
印刷区域（最大）	291 mm × 413 mm
印刷缩放比率	任意指定：50 - 200% 标准缩放比率（放大）：163%, 141%, 122%, 116% 标准缩放比率（缩小）：87%, 82%, 71%, 61% 页边放大：90 - 99%
印刷速度	每分钟约 60 - 150 张（控制面板：5 级速度调节，触摸面板：150 ppm）
印刷位置调整	垂直：±15 mm，水平：±10 mm
油墨供给	全自动（每筒 1000 毫升）
版纸供给 / 回收	全自动（约每卷 220 张）
废版盒容量	80 张
用户界面	带进度箭头指示灯的 LCD 触摸面板，正面操作
选购附件	自动进稿机 AF-VI:II、自动进稿机 DX-1、分页机、磁卡计数器、彩色滚筒、网卡 RISORINC-NET-D:G/GII、特殊纸张进纸组件、撑脚、油墨 / 版纸支架、宽型堆垛盒、理想控制器 PS7R
电源	MV7690C：220V AC, 50 Hz <3.0A>
尺寸	使用时：1605 mm (W) × 725 mm (D) × 730 mm (H) 存储时：1010 mm (W) × 725 mm (D) × 730 mm (H)
重量	约 168 kg

注：

- 请注意，由于本机的改进与修改，本手册中的某些图像与说明可能与您的速印机不同。
- 以上规格如果变更恕不另行通知。

Optional Accessories for MZ 970 & 990 Series

Optional Accessories

A variety of optional accessories are available to enhance the capabilities of the machine. For details about the optional accessories, see your dealer (or authorized service representative).

◆ Auto Document Feeder AF-VI:II

Feed up to 50 sheets of originals automatically.

◆ Auto Document Feeder DX-1

Feed up to 50 sheets of originals automatically. Both sides of original can be scanned automatically.

◆ Color Cylinder (Drum)

Simply change the Cylinder (Drum) to print in multiple colors. (Case included)

◆ Key Card Counter

With a single button press, shows the numbers of printed copies and consumed masters within a given period of time. This can help you manage costs.

◆ Job Separator

With the Programed Printing function, allows the machine to print and sort into groups separated by tape.

◆ Stand

◆ RISO PRINTER Network Interface Card RISORINC-NET-D:G/GII

Use to directly connect the machine to the network.

This comes with the RISO-MONITOR software that allows you to check the status of the machine from computers.

◆ Special Paper Feed Kit

This unit allows you to feed thicker paper such as cards and envelopes.

◆ Ink/Master Holder

A rack kit for storing supply such as ink and masters.

◆ Document Storage Card DM-128CF

◆ Wide Stacking Tray

Paper Receiving Tray for sizes A6 - A3/Ledger 13.4" × 18.5" (340 mm × 470 mm).

◆ RISO Color Separation Software CS-2000

Easy to use application software for printing multi-colored, computer-generated images on your RISO printer.

◆ RISO Controller PS7R

A custom controller enabling the machine to be used as a network-connected PostScript 3 printer.

RISO MZ970

Master-making/printing methods	High-speed digital master-making/full automatic stencil printing
Original Type	Book (10 kg or less), sheet
Original Size (max./min.)	When using the Platen Glass : 50 mm × 90 mm - 297 mm × 432 mm When using the Auto Document Feeder AF-VI:II (option) : 100 mm × 148 mm - 297 mm × 432 mm When using Auto Document Feeder DX-1 (option) : 105 mm × 128 mm - 297 mm × 432 mm
Original Paper Weight	When using the Platen Glass : 10 kg or less When using the Auto Document Feeder AF-VI:II (option) : 50 g/m ² - 128 g/m ² When using Auto Document Feeder DX-1 (option) : 40 g/m ² - 128 g/m ² (When "Scanning Side -ADF" is set to "Back Side → Simplex" or "Duplex → Simplex" : 52 g/m ² - 105 g/m ²)
Print Paper Size (max./min.)	When simultaneously 2-Colour printing: 182 mm × 257 mm - 297 mm × 432 mm When 1-Colour printing (using Drum 1): 100 mm × 148 mm - 297 mm × 432 mm When 1-Colour printing (using Drum 2): 182 mm × 257 mm - 297 mm × 432 mm
Paper Supply Capacity	1000 sheets (64 g/m ²)
Print Paper Weight	46 g/m ² - 210 g/m ²
Image Processing mode	Line, Photo (Standard/Portrait/Group), Duo, Pencil
Master-making Time (for A4/portrait/100% reproduction ratio)	Approx. 57 seconds (for dual-colour print) Approx. 24 seconds (for single-colour print (Drum 1)) Approx. 34 seconds (for single-colour print (Drum 2))
Printing Area (max.)	291mm × 413mm
Print Reproduction Ratio	Zoom : 50 - 200% Standard reproduction ratio (enlargement) : 163%, 141%, 122%, 116% Standard reproduction ratio (reduction) : 87%, 82%, 71%, 61% Margin+ : 90 - 99%
Print Speed	Approx. 60 - 150 sheets per minute (Control panel: five steps variable, touch panel: 150 ppm)
Print Position Adjustment	Vertical : ±15 mm Horizontal : ±10 mm
Ink Supply	Full automatic (1000 ml per cartridge)
Master Supply/Disposal	Full automatic (approx. 220 sheets per roll)
Master Disposal Capacity	80 sheets
User Interface	LCD Touch Panel with Progress Arrow indicators, front-side operation
Optional Accessories	Auto Document Feeder AF-VI:II, Auto Document Feeder DX-1, Job Separator, Key Card Counter, Colour Drum, Network Interface Card RISORINC-NET-D:G/GII, Special Paper Feed Kit, Stand, Document Storage Card DM-128CF, Wide Stacking Tray, RISO Colour Separation Software CS-2000, RISO Controller PS7R
Power Source	MZ970 : 220V-240V AC, 50/60Hz <3.0A>
Dimensions	When in use : 1605 mm (W) × 725 mm (D) × 730 mm (H) When in storage : 1010 mm (W) × 725 mm (D) × 730 mm (H)
Weight	Approx. 168 kg

Note:

- Please note that due to improvements and changes to the machine, some images and explanations in this manual may not correspond to your machine.
- The specifications are subject to change without prior notice.

RISO MZ990

Master-making/printing methods	High-speed digital master-making/full automatic stencil printing
Original Type	Book (22 lb (10 kg) or less), sheet
Original Size (max./min.)	When using the Stage Glass : $1^{15}/_{16}$ " $\times$ $3^{9}/_{16}$ " (50 mm $\times$ 90 mm) - $11^{11}/_{16}$ " $\times$ 17" (297 mm $\times$ 432 mm) When using Auto Document Feeder AF-VI:II (option) : $3^{15}/_{16}$ " $\times$ $5^{13}/_{16}$ " (100 mm $\times$ 148 mm) - $11^{11}/_{16}$ " $\times$ 17" (297 mm $\times$ 432 mm) When using Auto Document Feeder DX-1(option) : $4^{1}/_{8}$ " $\times$ $5^{1}/_{16}$ " (105 mm $\times$ 128 mm) - $11^{11}/_{16}$ " $\times$ 17" (297 mm $\times$ 432 mm)
Original Paper Weight	When using the Stage Glass : 22 lb (10 kg) or less When using the Auto Document Feeder AF-VI:II (option) : 13-lb bond (50 g/m ²) - 34-lb bond (128 g/m ²) When using Auto Document Feeder DX-1 (option) : 11-lb bond (40 g/m ²) - 34-lb bond (128 g/m ²) (When "Scanning Side -ADF" is set to "Back Side $\rightarrow$ Simplex" or "Duplex $\rightarrow$ Simplex" : 14-lb bond (52 g/m ²) - 28-lb bond (105 g/m ²))
Print Paper Size (max./min.)	When simultaneously 2-Color printing: $7^{3}/_{16}$ " $\times$ $10^{1}/_{8}$ " (182 mm $\times$ 257 mm) - $11^{11}/_{16}$ " $\times$ 17" (297 mm $\times$ 432 mm) When 1-Color printing (using Cylinder (Drum) 1): $3^{15}/_{16}$ " $\times$ $5^{13}/_{16}$ " (100 mm $\times$ 148 mm) - $11^{11}/_{16}$ " $\times$ 17" (297 mm $\times$ 432 mm) When 1-Color printing (using Cylinder (Drum) 2): $7^{3}/_{16}$ " $\times$ $10^{1}/_{8}$ " (182 mm $\times$ 257 mm) - $11^{11}/_{16}$ " $\times$ 17" (297 mm $\times$ 432 mm)
Paper Supply Capacity	1000 sheets (17-lb bond (64 g/m ²))
Print Paper Weight	13-lb bond (46 g/m ²) - 110-lb index (210 g/m ²)
Image Processing mode	Line, Photo (Standard/Portrait/Group), Duo, Pencil
Master-making Time (for A4/portrait/100% reproduction ratio)	Approx. 57 seconds (for dual-color print) Approx. 24 seconds (for single-color print (Cylinder (Drum) 1)) Approx. 34 seconds (for single-color print (Cylinder (Drum) 2))
Printing Area (max.)	$11^{7}/_{16}$ " $\times$ $16^{3}/_{4}$ " (291 mm $\times$ 425 mm)
Print Reproduction Ratio	Zoom : 50 - 200% Standard reproduction ratio (enlargement) : 200%, 154%, 129%, 121% Standard reproduction ratio (reduction) : 78%, 65%, 61%, 50% Margin+ : 90 - 99%
Print Speed	Approx. 60 - 150 sheets per minute (Control panel: five steps variable, touch panel: 150 ppm)
Print Position Adjustment	Vertical : $\pm^{19}/_{32}$ " ($\pm$ 15 mm) Horizontal : $\pm^{3}/_{8}$ " ($\pm$ 10 mm)
Ink Supply	Full automatic (1000 ml per cartridge)
Master Supply/Disposal	Full automatic (approx. 220 sheets per roll)
Master Disposal Capacity	80 sheets
User Interface	LCD Touch Panel with Progress Arrow indicators, front-side operation

Optional Accessories	Auto Document Feeder AF-VI:II, Auto Document Feeder DX-1, Job Separator, Key Card Counter, Color Cylinder (Drum), Network Interface Card RISORINC-NET-D:G/GII, Special Paper Feed Kit, Stand, Document Storage Card DM-128CF, Wide Stacking Tray, RISO Color Separation Software CS-2000, RISO Controller PS7R
Power Source	MZ990 : 100V-120V / 220V-240V AC, 50/60Hz <7.3/3.0A>
Dimensions	When in use : $63\frac{3}{16}$ " (W) $\times$ $28\frac{9}{16}$ " (D) $\times$ $28\frac{3}{4}$ " (H) (1605 mm (W) $\times$ 725 mm (D) $\times$ 730 mm (H)) When in storage : $39\frac{3}{4}$ " (W) $\times$ $28\frac{9}{16}$ " (D) $\times$ $28\frac{3}{4}$ " (H) (1010 mm (W) $\times$ 725 mm (D) $\times$ 730 mm (H))
Weight	Approx. 370 $\frac{1}{16}$ lb (168 kg)

Note:

- Please note that due to improvements and changes to the machine, some images and explanations in this manual may not correspond to your machine.
- The specifications are subject to change without prior notice.

Optional Accessories for MZ 970 Series (Chinese)

选购附件

有各种各样的选购附件可用于增强本机功能。

如需了解有关选购附件的详情，请联系您的经销商（或授权维修中心）。

◆ 自动进稿机 AF-VI:II

可自动供给多达 50 张原稿。

◆ 自动进稿机 DX-1

可自动供给多达 50 张原稿。原稿的两面可以自动扫描。

◆ 彩色滚筒

只需更换滚筒便可多种颜色印刷。（包含外壳）

◆ 磁卡计数器

只要按一个键，即可显示指定时间段内的印刷量与版纸消耗量。这有助于成本管理。

◆ 分页机

使用编程印刷功能，可供本机进行印刷并以胶带分页成组。

◆ 撑脚

◆ 理想速印机网卡 RISORINC-NET-D:G/GII

用于直接将本机接入网络。

此附件附带 RISO-MONITOR 软件，可用于从计算机检查本机状态。

◆ 特殊纸张进纸组件

通过本机组可以送入较厚的纸张，如卡片与信封。

◆ 油墨 / 版纸支架

用于储存备件（如油墨与版纸）的支架组件。

◆ 宽型堆垛盒

对应 A6 - A3 尺寸的出纸盒 /Ledger（340 mm × 479 mm）。

◆ 理想控制器 PS7R

自选控制器，可以使本机用作网络连接的 PostScript 3 速印机。

技术规格

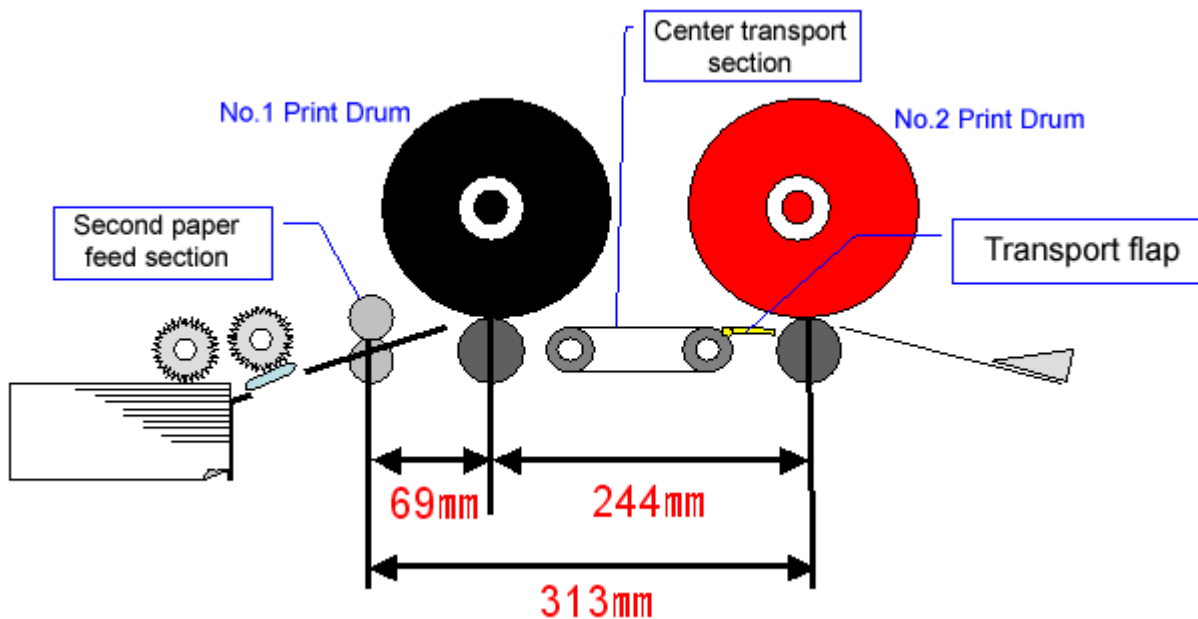
RISO MZ970 (Chinese)

制版 / 印刷方法	高速数字制版 / 全自动模版印刷
原稿类型	书本 (10 kg 或以下)、稿纸
原稿尺寸 (最大 / 最小)	使用扫描台玻璃时: 50 mm × 90 mm - 297 mm × 432 mm 使用自动进稿机 AF-VI:II (选购件) 时: 100 mm × 148 mm - 297 mm × 432 mm 使用自动进稿机 DX-1 (选购件) 时: 105 mm × 128 mm - 297 mm × 432 mm
原稿纸张重量	使用扫描台玻璃时: 10 kg 或以下 使用自动进稿机 AF-VI:II (选购件) 时: 50 g/m ² - 128 g/m ² 使用自动进稿机 DX-1 (选购件) 时: 40 g/m ² - 128 g/m ² (“扫描侧 ADF” 设定为 “背面 → 单面” 或 “双面 → 单面”: 52 g/m ² - 105 g/m ²)
印刷纸张尺寸 (最大 / 最小)	双色印刷时: 182 mm × 257 mm - 297 mm × 432 mm 单色印刷时 (用滚筒 1): 100 mm × 148 mm - 297 mm × 432 mm 单色印刷时 (用滚筒 2): 182 mm × 257 mm - 297 mm × 432 mm
进纸容量	1000 张 (64 g/m ²)
印刷纸张重量	46 g/m ² - 210 g/m ²
图像处理模式	文字、照片 (标准 / 肖像 / 群组)、图文、铅笔
制版时间 (对于 A4/ 肖像 / 100% 缩放比率)	约 57 秒 (双色印刷) 约 24 秒 (单色印刷 (滚筒 1)) 约 34 秒 (单色印刷 (滚筒 2))
印刷区域 (最大)	291 mm × 413 mm
印刷缩放比率	任意指定: 50 - 200% 标准缩放比率 (放大): 163%, 141%, 122%, 116% 标准缩放比率 (缩小): 87%, 82%, 71%, 61% 页边放大: 90 - 99%
印刷速度	每分约 60 - 150 张 (控制面板: 5 级速度调节, 触摸面板: 150 ppm)
印刷位置调整	垂直: ±15 mm, 水平: ±10 mm
油墨供给	全自动 (每筒 1000 毫升)
版纸供给 / 回收	全自动 (约每卷 220 张)
废版盒容量	80 张
用户界面	带进度箭头指示灯的 LCD 触摸面板, 正面操作
选购附件	自动进稿机 AF-VI:II、自动进稿机 DX-1、分页机、磁卡计数器、彩色滚筒、网卡 RISORINC-NET-D:G/GII、特殊纸张进纸组件、撑脚、油墨 / 版纸支架、宽型堆垛盒、理想控制器 PS7R
电源	MZ970: 220V AC, 50 Hz <3.0A>
尺寸	使用时: 1605 mm (W) × 725 mm (D) × 730 mm (H) 存储时: 1010 mm (W) × 725 mm (D) × 730 mm (H)
重量	约 168 kg

注:

- 请注意, 由于本机的改进与修改, 本手册中的某些图像与说明可能与您的速印机不同。
- 以上规格如果变更恕不另行通知。

2. Paper Size



Paper is transported from the pickup roller to the second paper feed roller and discharged by a pair of pressure rollers. Paper is held in place by a roller at any given time during printing.

If paper is not held in place by a roller, it may move in any of the four directions during printing.

The amount of positional shift grows especially large for small copy paper sheets, resulting in noticeable print registration problems.

A print registration problem can cause serious problems, particularly with dual-color printing.

Since paper shorter than 244 mm cannot be held in place by the center transport section, the minimum standard paper size that can be printed is B5 (loaded vertically).

The single-color printing operation using the first print drum is identical to that of an ordinary single-color printer. Thus, the paper size restrictions are also the same.

For single-color printing using the second print drum, the distance between the second paper feed section and the second print drum is 313 mm and longer than when using the first print drum. However, this has minimal consequences for single-color printing. The minimum paper size that can be printed appropriately is B5.

Paper will shift significantly with smaller paper sizes, and the machine will not provide maximum printing quality.

CHAPTER 3: MAIN DRIVE SECTION

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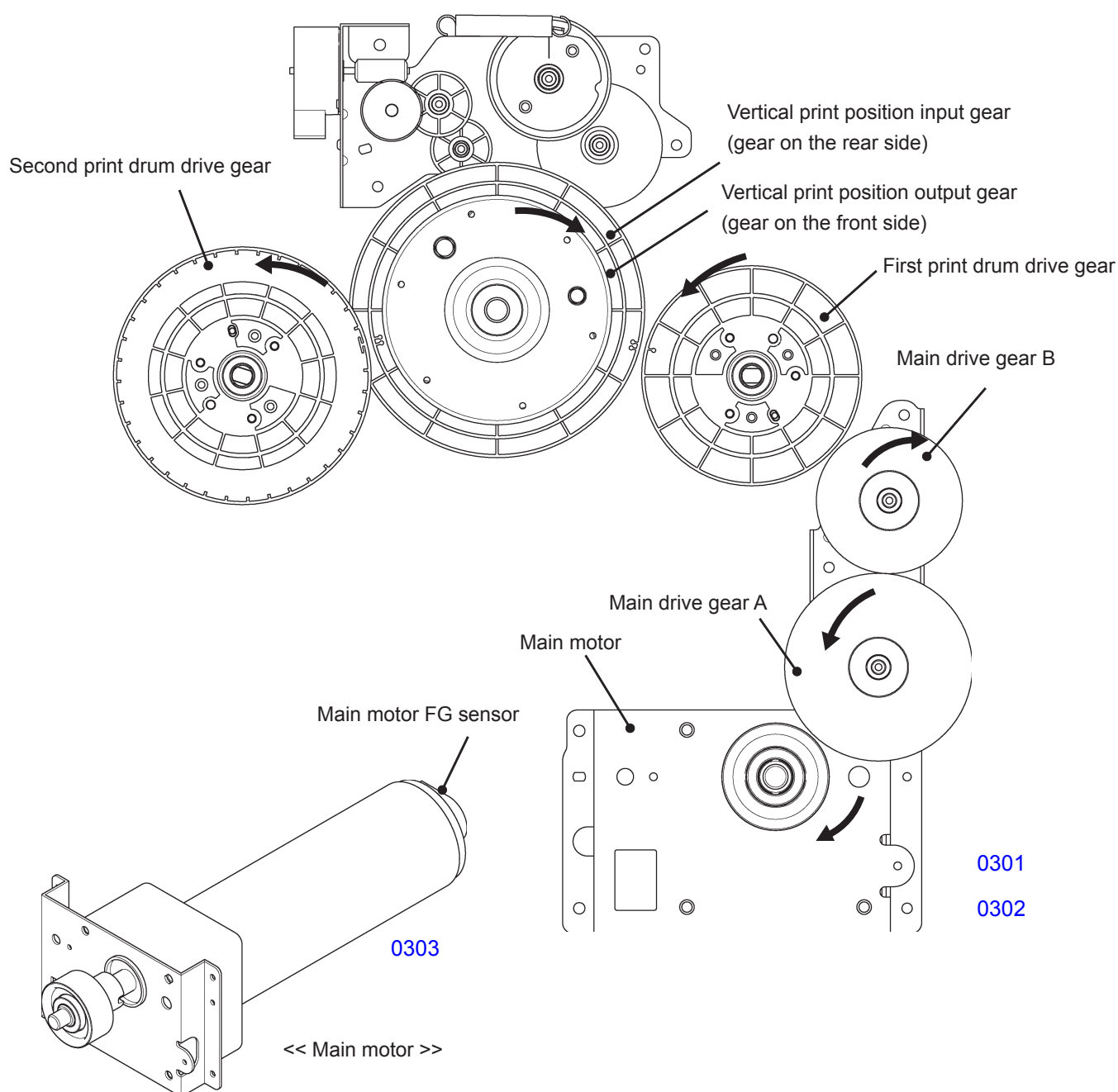
Mechanism

1. Main Drive Rotation Mechanism

When the main motor turns ON, the main motor gear rotates. This rotation is transmitted to the first print drum drive gear by means of main drive gear A and main drive gear B.

The first print drum drive gear then turns the vertical print position input gear. This rotation is transmitted to the second print drum drive gear by the planetary gear and vertical print position output gear.

The main motor FG sensor detects the rotation speed and angle of the print drums.



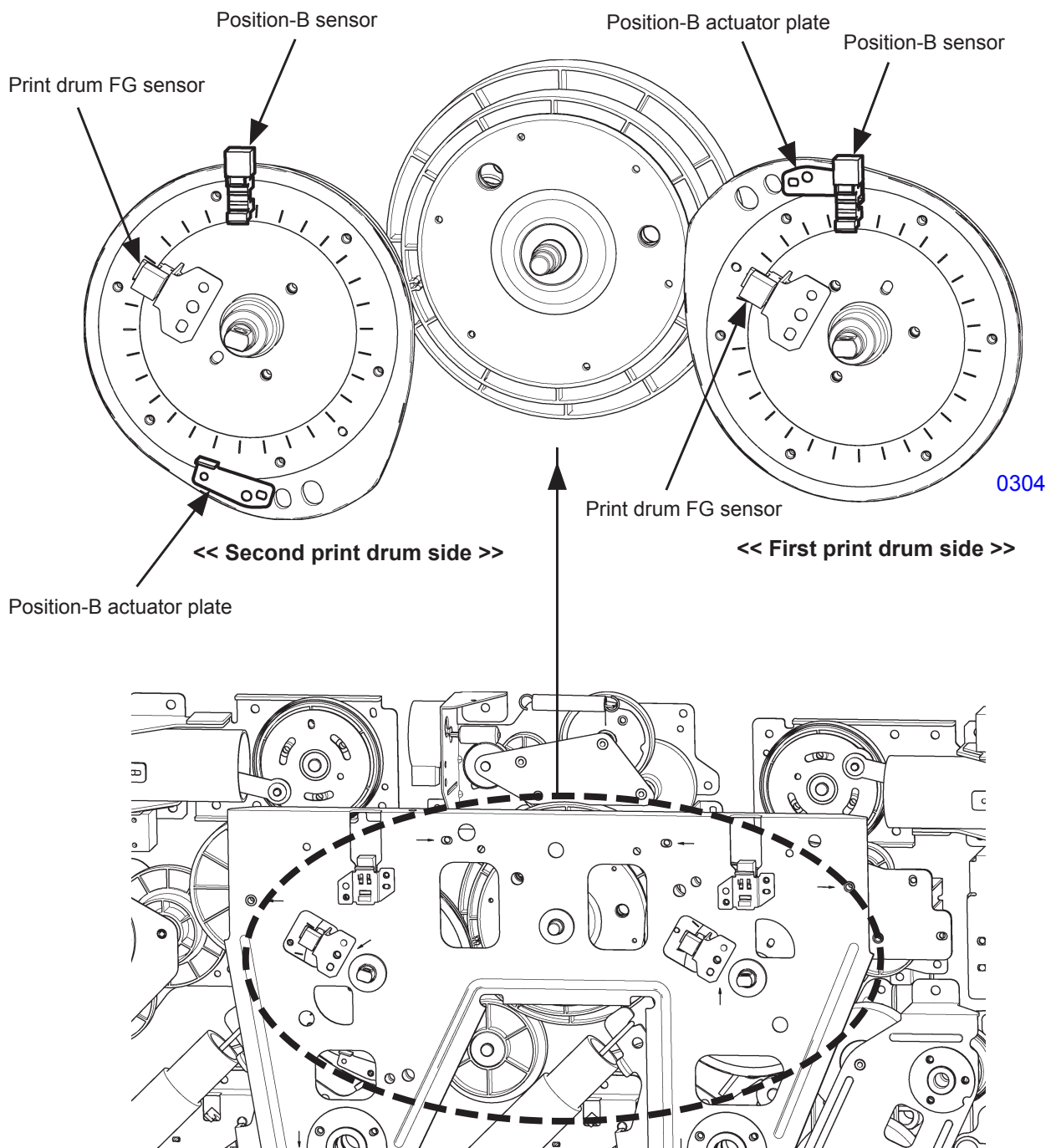
2. Print Drum Rotation Angle Detection Mechanism

For print drum rotation angle detection, the position-B sensors on the first print drum side and second print drum side and the position-B actuator plates on the pressure cams check the machine position-B. Then, using machine position-B as the reference, the main motor FG sensors check the print drum rotation angles.

The position-B of the machine is when the actuator plate is at the center of the Position-B sensor. The print drum angle at machine position-B is the 0°. The machine has two position-B conditions. One is for the print drum No.1 and the other is for the print drum No.2.

For each print drum, the position-A is 65° turn from the machine position-B detected for that print drum.

The main motor FG sensor pulse count for one rotation of the print drum is 2,880 pulses.



3. Print Drum FG Sensors

[For detailed information on the second paper feed mechanism, refer to Chapter 5.]

The print drum FG sensors make precise monitoring of the print drum rotation speed to enable the machine to control the second paper feed motor speed. This results in good image registration on the printing papers and synchronization of the speed between the second paper feed motor and the main motor during the printing action.

(1) Second paper feed operation, with the No.1 print drum installed

The vertical print position adjustment for the No.1 print drum is done by adjusting the timing of the second paper feed. [Refer to the chapter on the second paper feed for the detail.]

When the No.1 print drum rotates to a given angle, the second paper feed motor activates and begins transporting the paper toward the print drum. The registration sensor detects the leading edge of the paper to confirm the start of the second paper feed action. [Refer to sketch (a) below.]

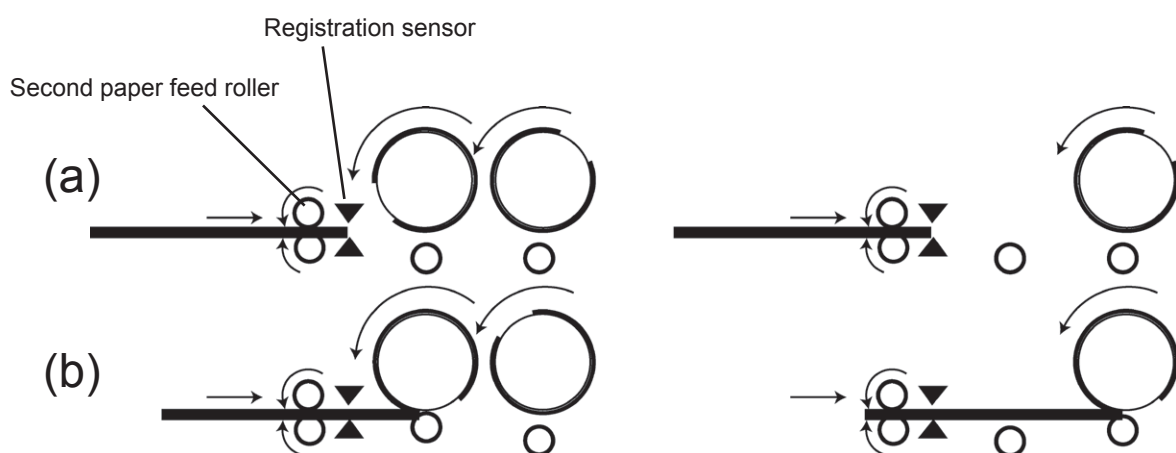
The second paper feed motor continues the rotation and transports the paper to the No.1 print drum. [Refer to sketch (b) below.]

The speed of the second paper feed motor is controlled so that the leading edges of the printing papers contacts the No.1 print drum at one same position every time. The speed of the second paper feed motor is also controlled to run at the same speed as the No.1 print drum once the paper arrives to the No.1 print drum. This timing control is done by monitoring the No.1 print drum speed by the first print drum FG sensor and according to the monitored result, the second paper feed motor speed is adjusted for each paper coming in.

Therefore, the second paper feed motor speed for the distance between the sketches (a) and (b) differs between each paper. After sketch (b), the second paper feed motor changes its speed to match with that of the print drum.

(2) Second paper feed operation, without the No.1 print drum installed

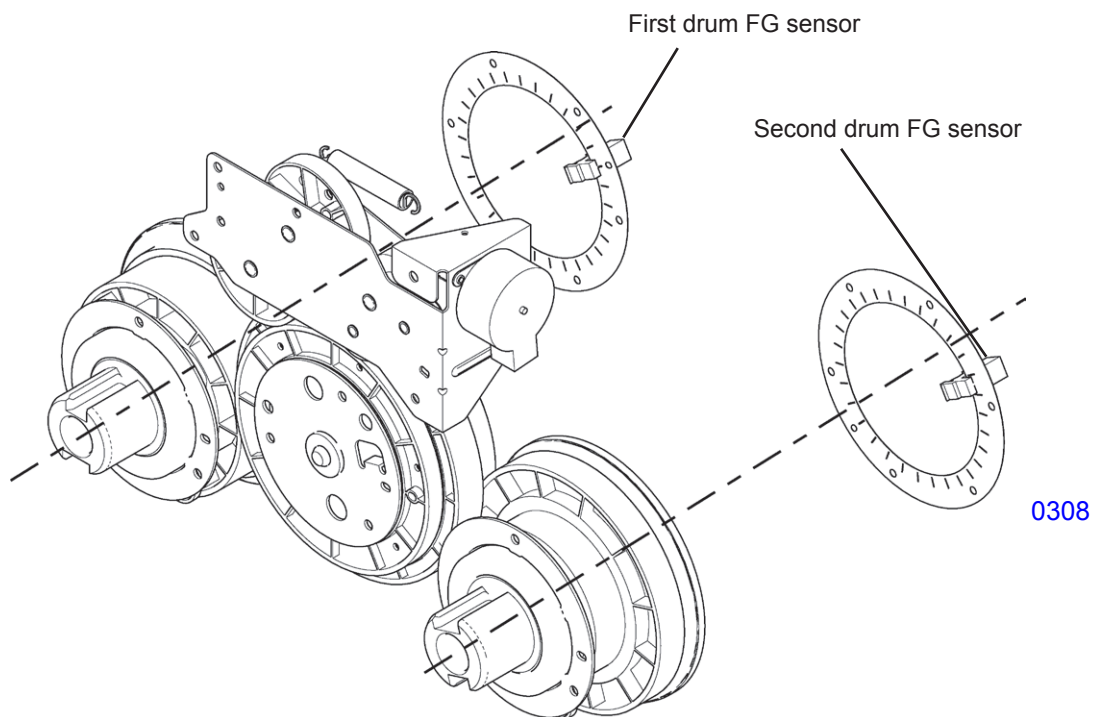
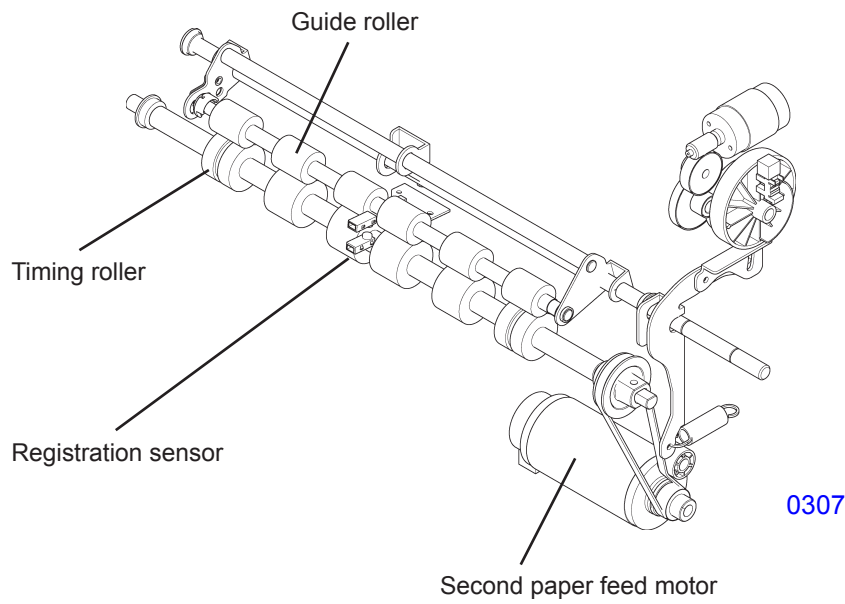
The operation is basically the same as described in (1), but the rotation of the second paper feed motor is controlled based on feedback from the second print drum FG sensor.



< With No.1 print drum installed >

< Without No.1 print drum >

0306



<< View from the panel side >>

4. Vertical Position Adjustment Mechanism

The paper feed timing of the second paper feed section is used for vertical print position adjustment of the first print drum in single-color printing (with the first print drum) or in dual-color printing, and for adjustment of the vertical print position of the second print drum for single-color printing using just the second print drum, when no first print drum is installed in the main unit. (Refer to the section on the second paper feed.)

Vary the phase difference between the first and second print drums to adjust the vertical print position of the second print drum in dual-color printing or in single-color printing with the first print drum installed in the main unit.

The phase difference is varied by the vertical print position main unit installed between the first print drum drive gear and the second print drum drive gear.

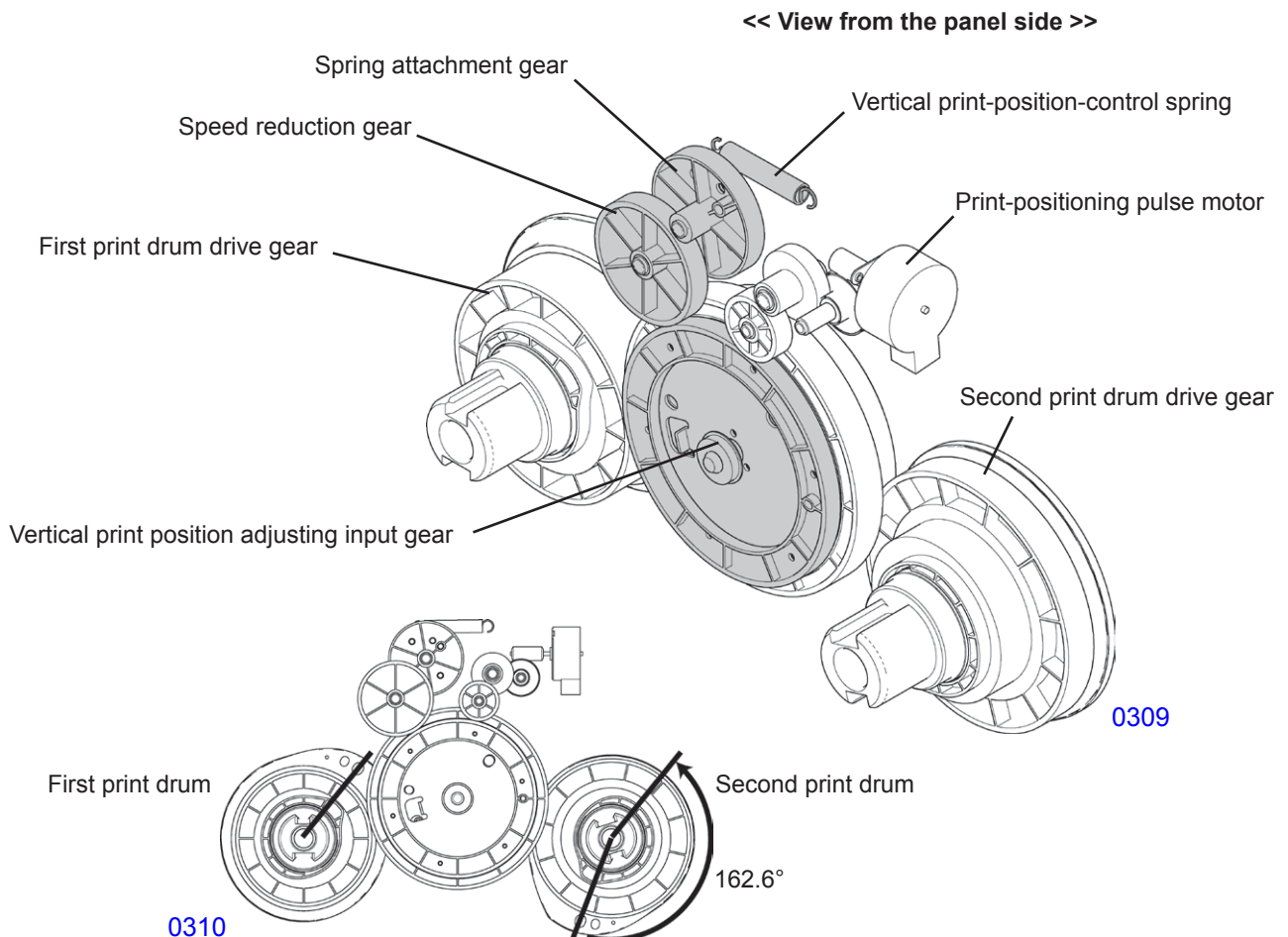
The vertical print position main unit incorporates a planetary gear mechanism and uses the print-positioning pulse motor of the vertical print position adjusting unit to control the phase difference.

At the initial vertical print position, the phase difference of the second print drum relative to the first print drum is 162.6° (equivalent to the distance from the first print drum to the second print drum).

In addition, to prevent load fluctuations on the second print drum from causing a backlash in the vertical print position adjusting input gear, resulting in print registration problems with the second print drum, the vertical print-position-control spring, spring attachment gear, and speed reduction gear press the vertical print position adjusting input gear in the counterclockwise direction.

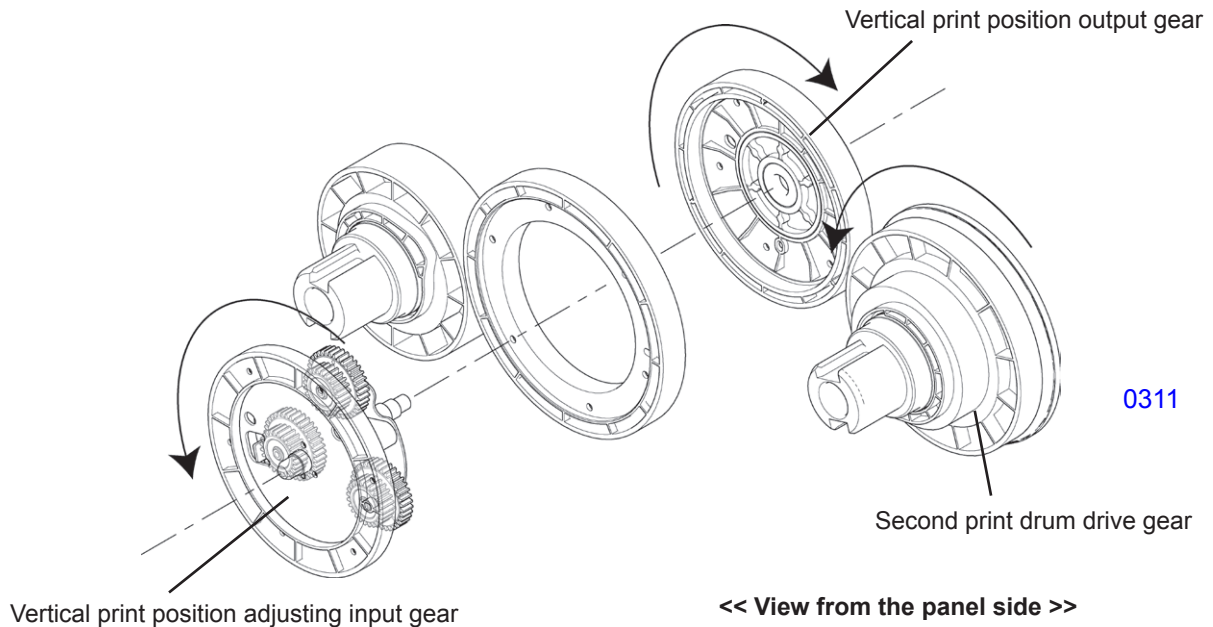
If you press the vertical print-positioning key while the machine is in standby, the print-positioning pulse motor will not start. Only the panel display will reflect this operation.

The vertical print position is changed when printing starts.



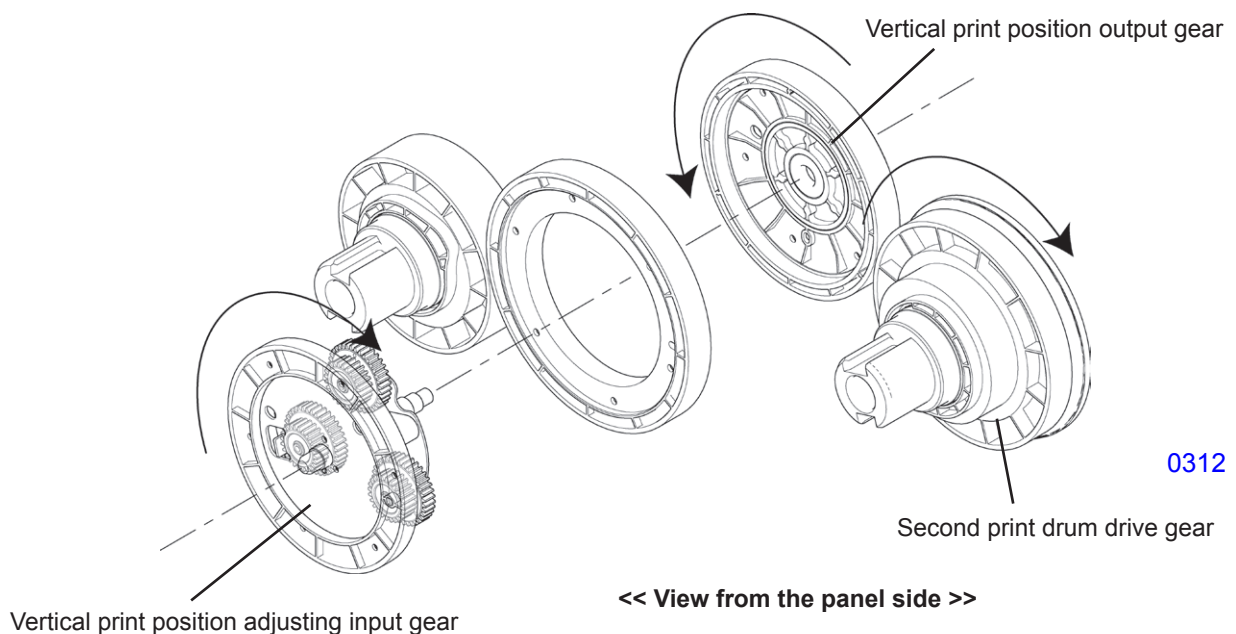
When < → > key (upward) of the second print drum is pressed in dual-color printing

Pressing the < → > key (upward) causes the print-positioning pulse motor to rotate the vertical print position adjusting input gear counterclockwise. Since the vertical print position output gear rotates clockwise (it rotates clockwise during normal printing operations) and the second print drum drive gear turns counterclockwise, the phase of the second print drum advances, raising the print position.



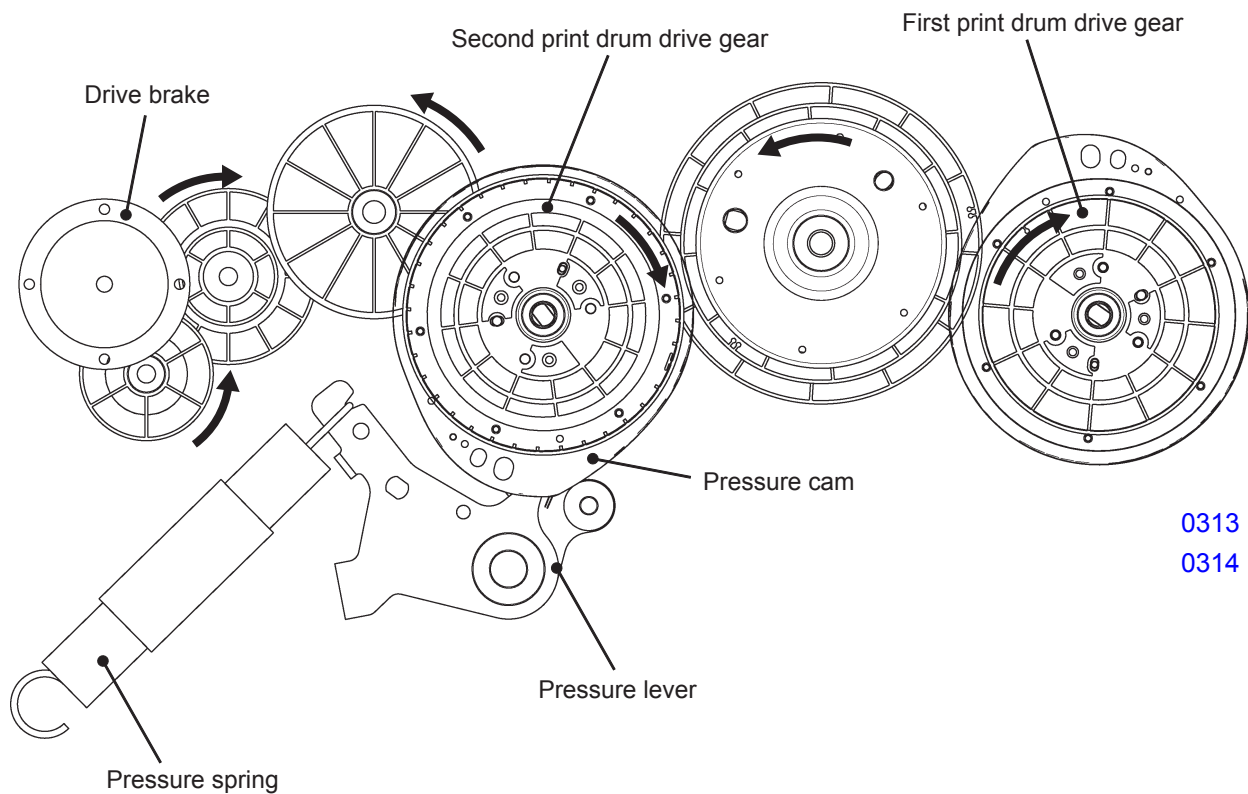
When < ← > key (downward) of the second print drum is pressed in dual-color printing

Pressing the < ← > key (downward) causes the print-positioning pulse motor to rotate the vertical print position adjusting input gear clockwise. Since the vertical print position output gear rotates counterclockwise and the second print drum drive gear turns clockwise, the phase of the second print drum is retarded, lowering the print position.



5. Drive Brake Mechanism

During printing operations, when the pressure lever on the second print drum side begins to move down relative to the pressure cam lobe, the pressure spring force turns the second print drum upward as much as the backlash (backlash from the first print drum drive gear to the second print drum drive gear) of the second print drum gear allows. The degree of this deviation varies with each rotation, potentially resulting in transfer ghosting (i.e., ink transferred by the first print drum pressing against the second master, resulting in the superimposition of the image printed by the first print drum during the next printing operation). To prevent this, the drive brake is switched ON when the second print drum angle is between 215.4° and 267.4° , applying a load on the second print drum drive gear. This keeps the pressure spring from preventing the second print drum from turning due to backlash.



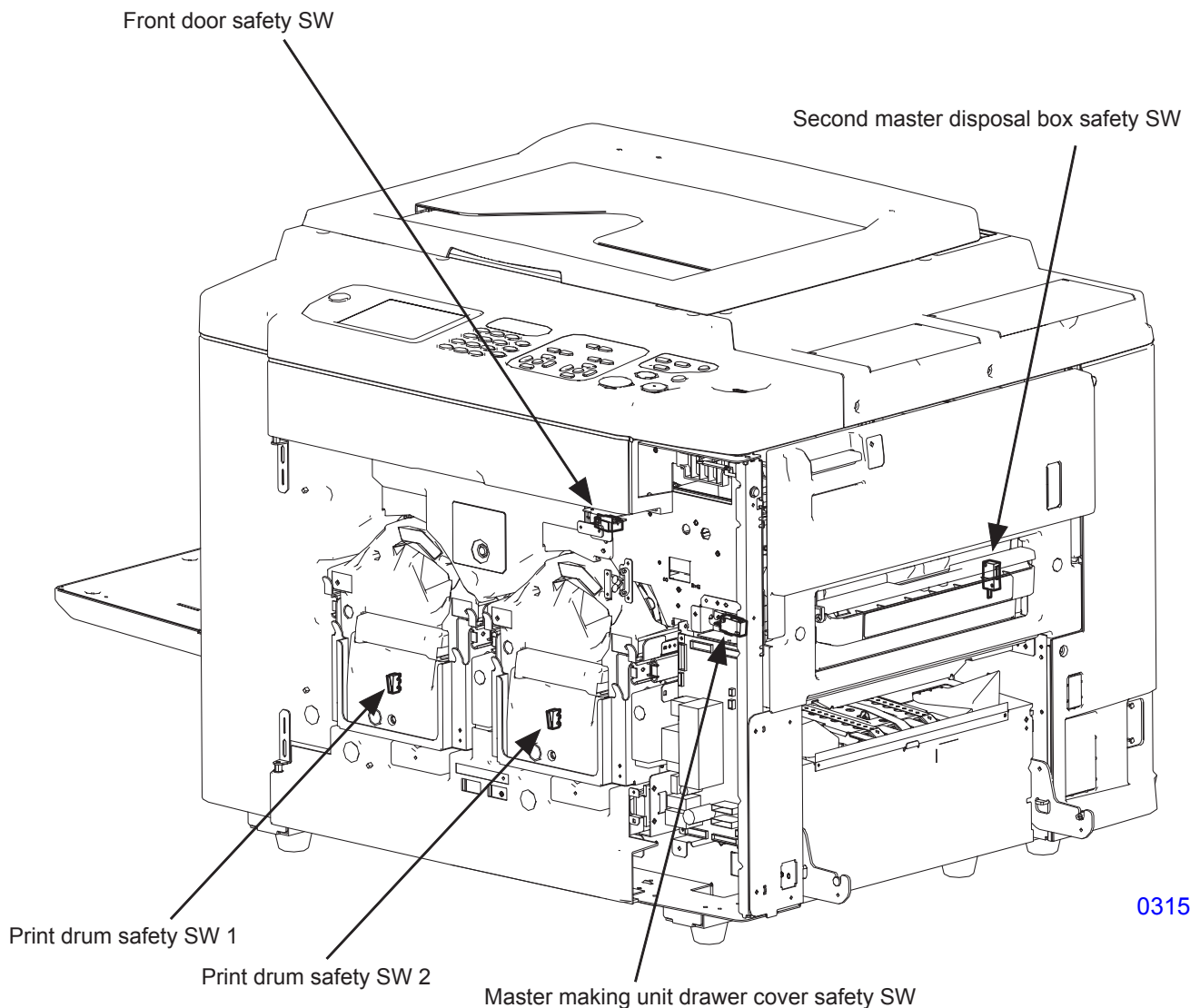
0313

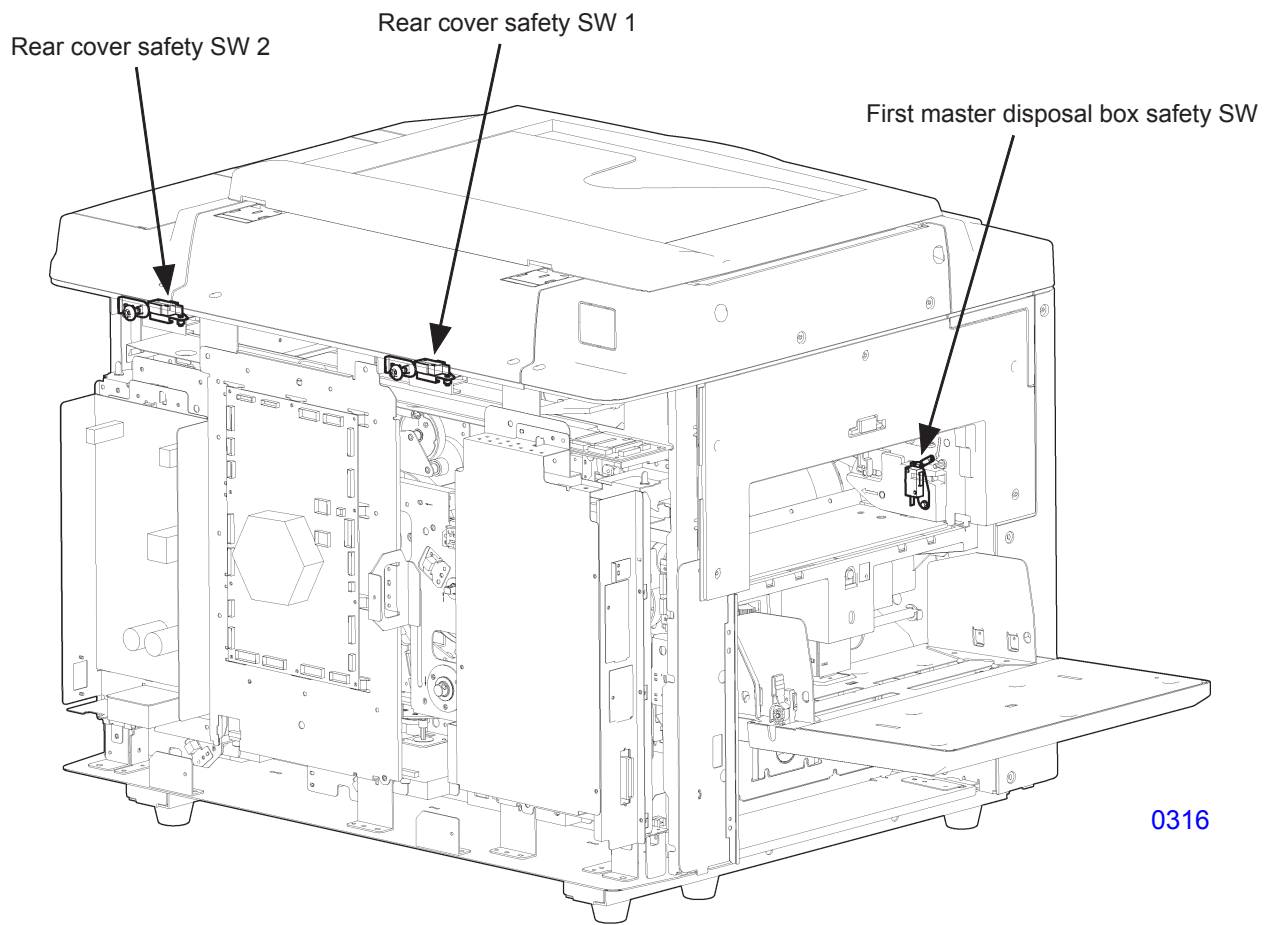
0314

6. Main Motor Safety Mechanism

Eight safety switches (rear cover safety SW1, rear cover safety SW2, master making unit drawer cover safety SW, first master disposal box safety SW, second master disposal box safety SW, front door safety SW, print drum safety SW1, and print drum safety SW2) will prevent the main motor, first clamp motor, second clamp motor, first master disposal motor, second master disposal motor, first master compression motor, second master compression motor, first horizontal pulse motor, second horizontal pulse motor, and master making unit transport pulse motor to go ON if any of these safety switch is not set.

- * Even though the front door safety SW is OFF, the main motor will activate if the print drum safety switches 1 and 2 are both ON. (This is to enable the two print drums to be removed at same time.)



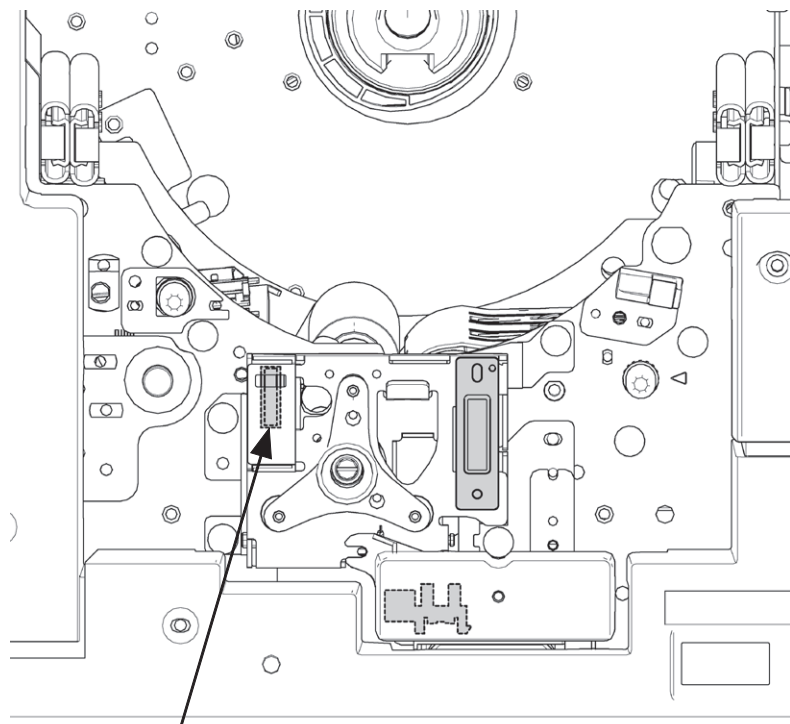


0316

7. Print Drum Set Safety Mechanism

If the front cover safety switch is OFF and either the first print drum safety switch or second print drum safety switch is OFF, the safety mechanism prevents the main motor, first clamp motor, second clamp motor, first master disposal motor, second master disposal motor, first master compression motor, second master compression motor, first horizontal pulse motor, second horizontal pulse motor, cutter motor, and master making unit transport pulse motor from turning ON.

While the front cover safety switch and all other safety switches are ON, the machine will operate even if one of the print drum safety switch is OFF. (This is to permit one color printing.)



0317

Print drum safety SW

Disassembly



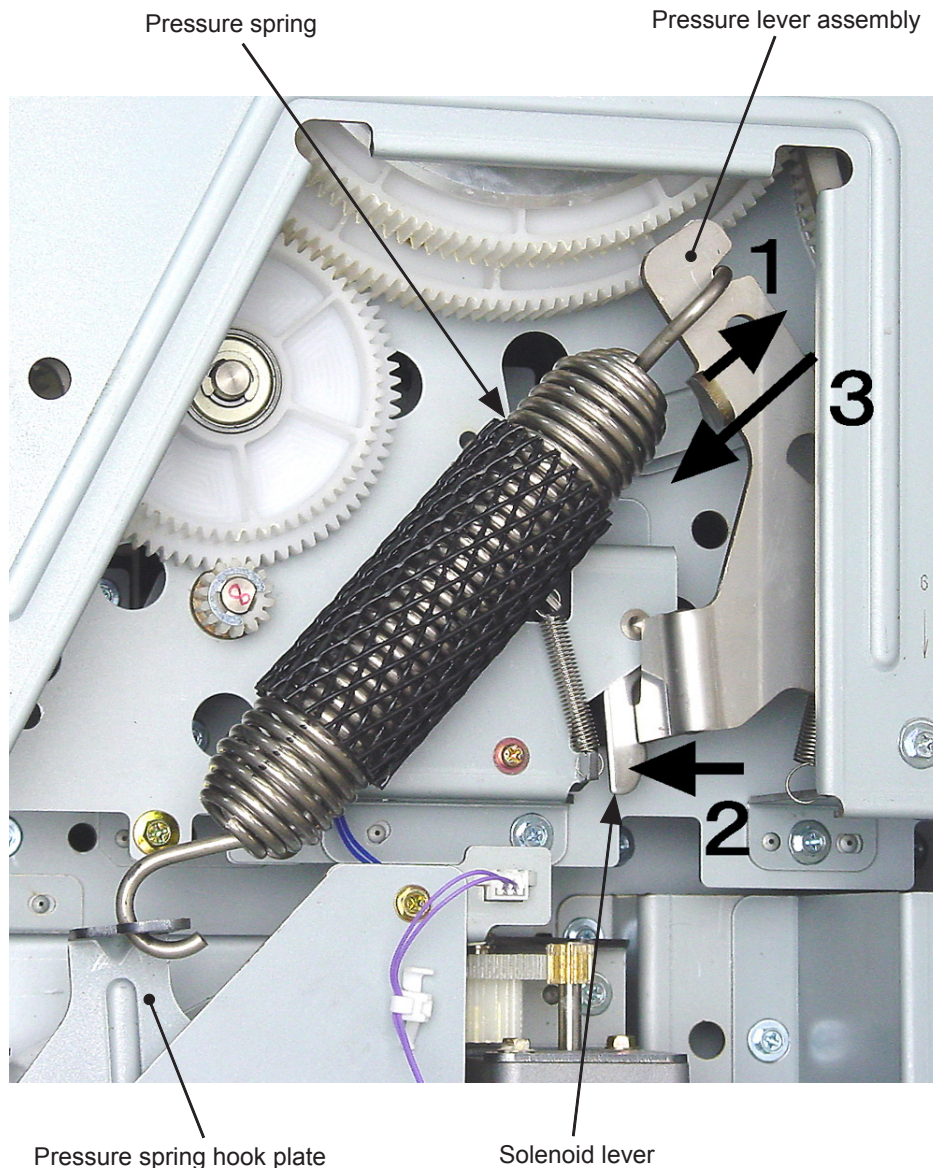
PRECAUTIONS FOR DISASSEMBLY OF MAIN DRIVE SECTION AND PRESSURE SECTION

Following removal of the main cover, the pressure springs must be removed before disassembly of the main drive or pressure sections. Failure to remove the pressure springs may result in sudden rotation of gears or cams from the force of the springs and cause injury.

To prevent accidents, always remove the pressure springs (on both the first and second print drum sides) before disassembly. Reattach the pressure springs (the first and second print drum sides) only at the end of reassembly.

1. Removing Pressure Springs

- (1) Make confidential masters on both the first and second print drums.
- (2) Run Test Mode No. 892 (Machine Position-B stop) on the second print drum side. Then switch OFF the machine power.
- (3) Remove both the left and right rear covers, and open the PCB brackets.
- (4) On both the first and second print drum sides, turn the pressure lever assembly slightly clockwise. With the solenoid levers unhooked from the pressure lever assembly, return the pressure lever assembly to the original position. This will reduce the pressure spring tension.
- (6) Unhook the two pressure springs from the pressure spring hook plates on one end and the other end of the springs from the pressure lever assemblies.



0318

2. Removing the Position-B Sensor and Print Drum FG Sensor (Same Procedure for both the 1st and the 2nd.)

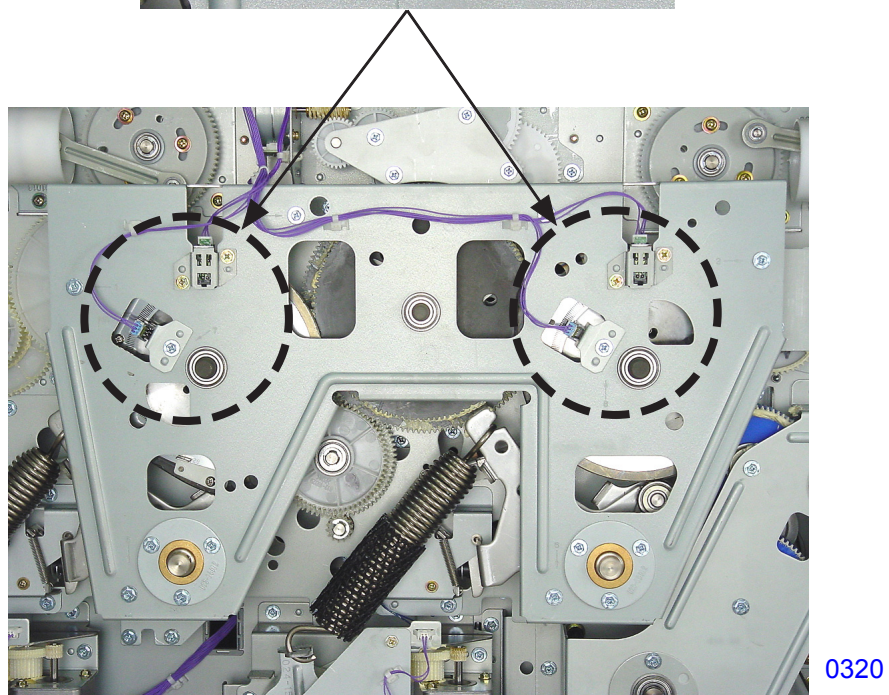
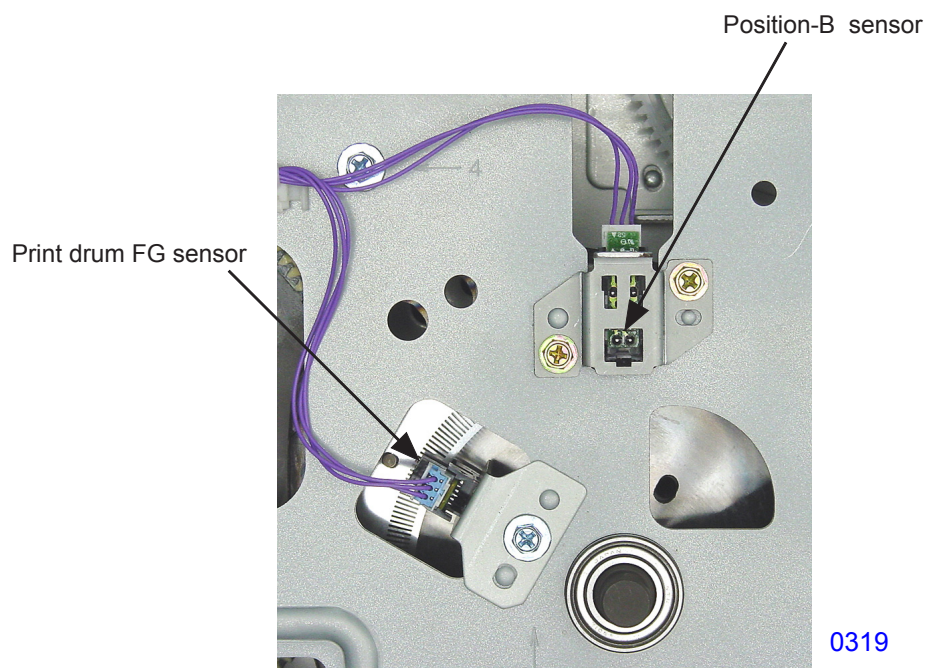
- (1) Remove both the left and right rear covers, and open the PCB brackets.

Removing the Position-B sensor

- (2) Unplug the connector, remove the mounting screws (RS tight, M3 x 6, 2 pcs), and dismount the position-B sensor together with the bracket.

Removing the Print drum FG sensor

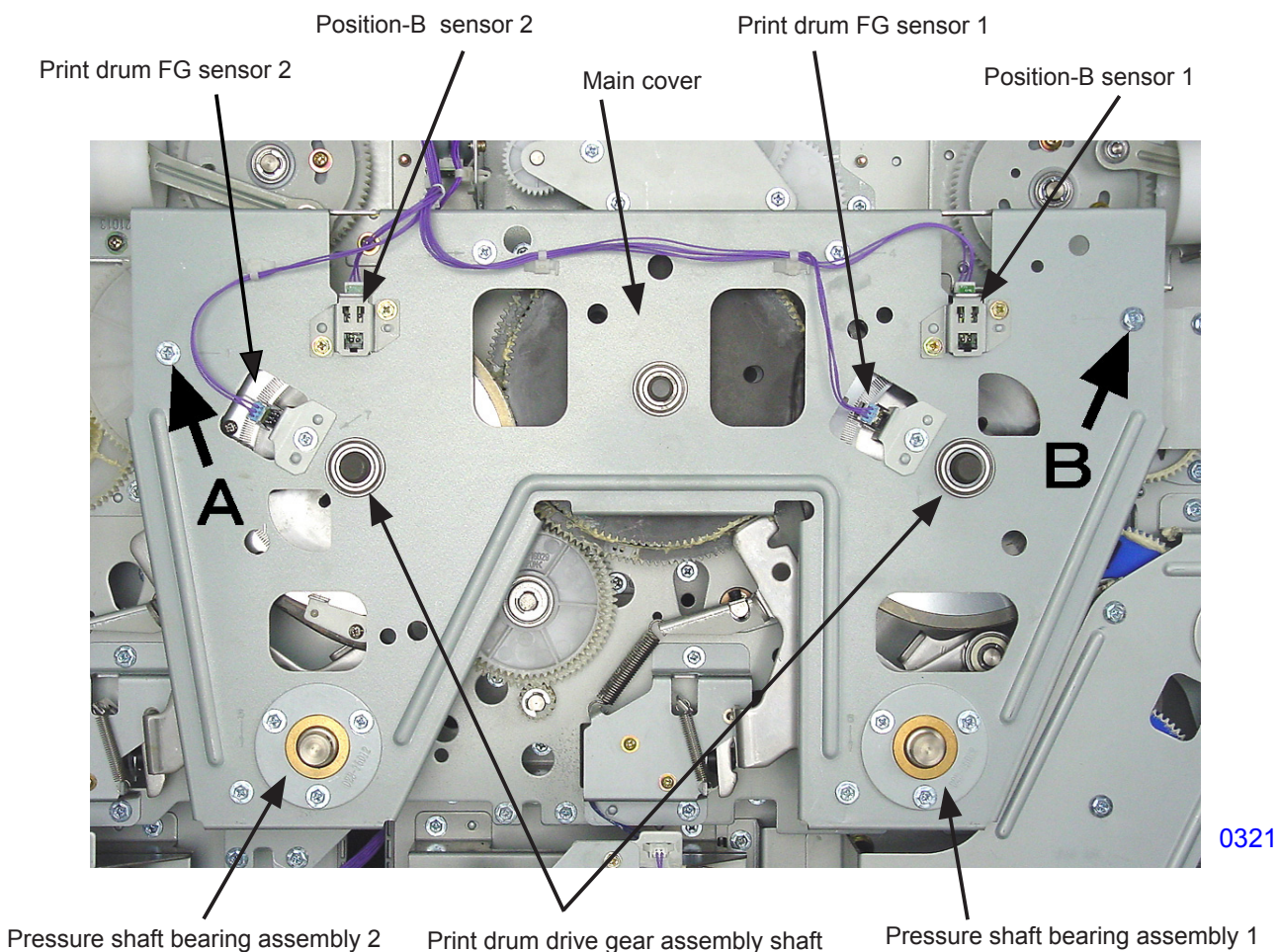
- (2) Unplug the connector, remove the mounting screw (RS tight with round tip, M4 x 8, 1 pc), and dismount the print drum FG sensor together with the bracket.



3. Removing the Drive Encoder (Same Procedure for both the 1st and 2nd unit)

- (1) Remove the pressure springs, referring to the previous instruction.
- (2) Close the PCB bracket and attach the rear right cover. (This is to switch ON the two rear cover safety switches to run the machine on next step.)
- (3) Turn ON the machine power and rotate print drum No.1 to position-B. Then turn OFF the power.
- (4) Remove the rear right cover, and open the PCB bracket.
- (5) Remove both the No.1 and No.2 drum FG sensors.
- (6) Disconnect the connectors from the No.1 and No.2 position-B sensors. Then detach the reusable bands (at four locations).
- (7) Remove the mounting screws (RS tight with round tip, M4 x 8, 3 pcs each) and dismount the pressure shaft bearing assemblies No.1 and No.2.
- (8) Remove the mounting screws (RS tight, M4 x 8, 6 pcs) and detach the main cover.

* While detaching the main cover, press on the print drum drive gear assembly shaft to keep the print drum drive gear assemblies from falling off together with the main cover.

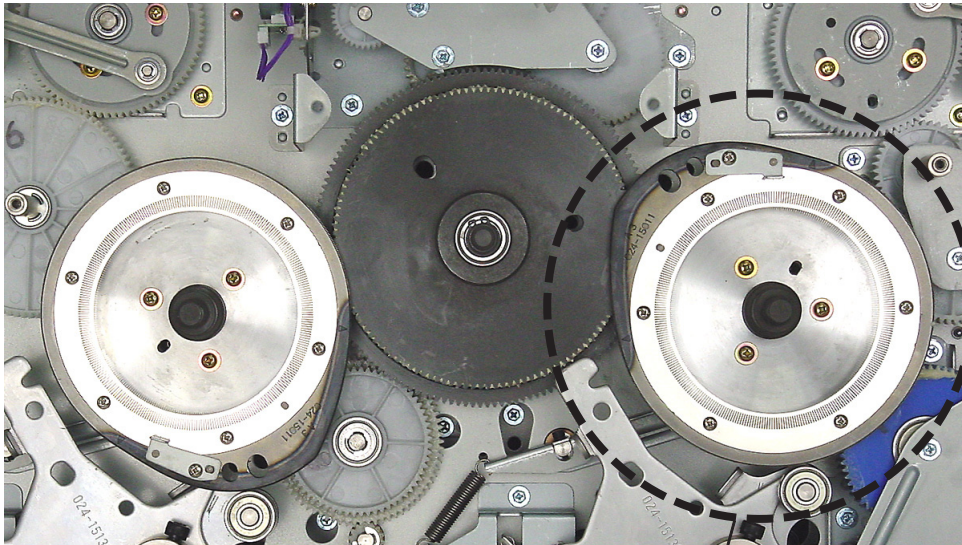


<< Precautions on reinstallation of the Main cover >>

- When mounting the main cover, tighten the screws A and B before tightening the remaining four screws. Attach the two Pressure shaft bearing assemblies after the main cover is screwed on tightly.

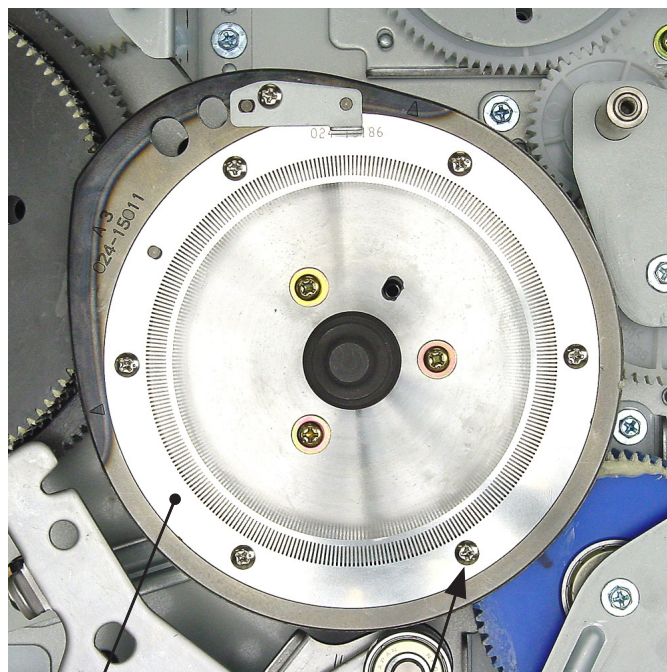
(9) Remove the mounting screws (M3 x 6; 6 pcs) and detach the drive encoder.

Caution: The drive encoder is a thin sharp metal disc. Watch out not to cut hands or fingers.



0322

<< With the main cover removed >>



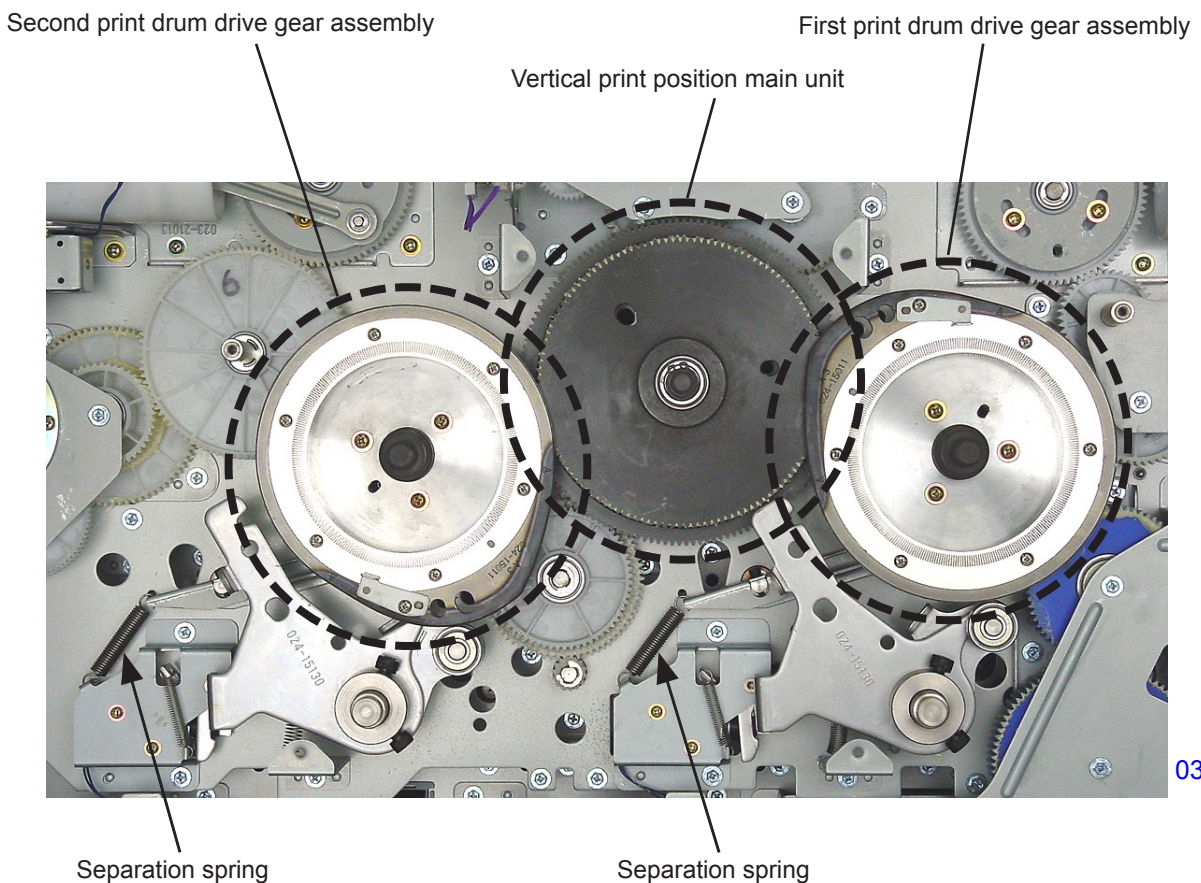
0323

Drive encoder

Screws

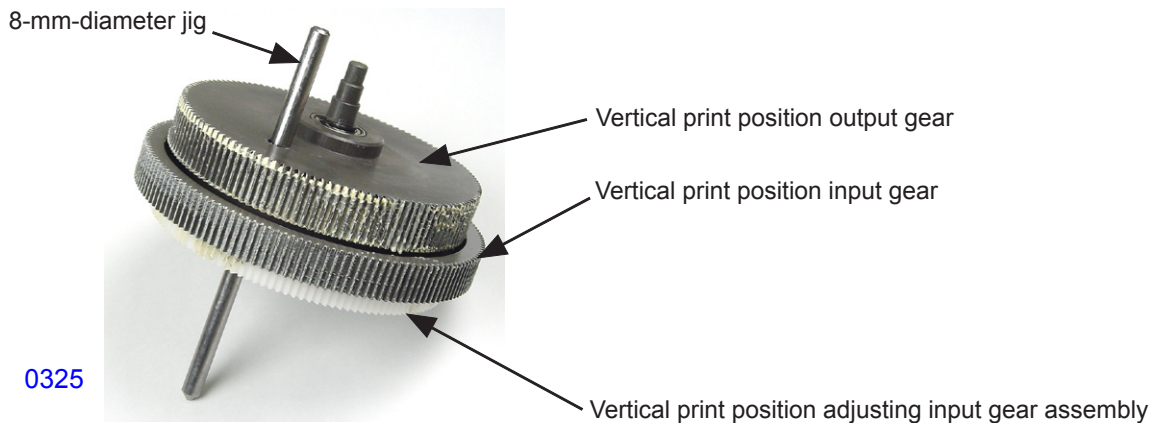
4. Removing the Vertical Print Position Main Unit

- (1) Remove the pressure springs, referring to the previous instructions on this chapter.
- (2) Close the PCB brackets and attach the rear right cover. (This is to switch ON the two rear cover safety switches to run the machine on next step.)
- (3) Pull out both the first and second print drums, set the first print drum side to position-B, and switch OFF the machine power.
- (4) Remove the rear right cover, and open the PCB bracket.
- (5) Remove the main cover, referring to the previous instructions on this chapter.
- (6) Remove the separation springs from the first and second print drum sides.
- (7) Remove the vertical print-position-control spring.
- (8) Remove the first and second print drum drive gear assemblies.
- (9) Remove the vertical print position main unit.

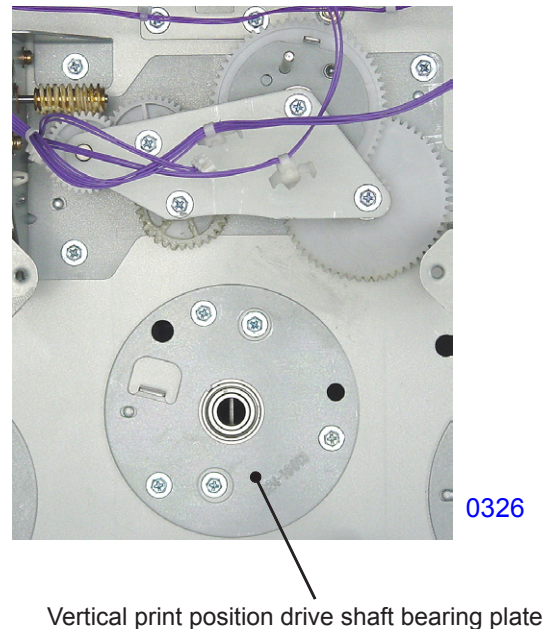
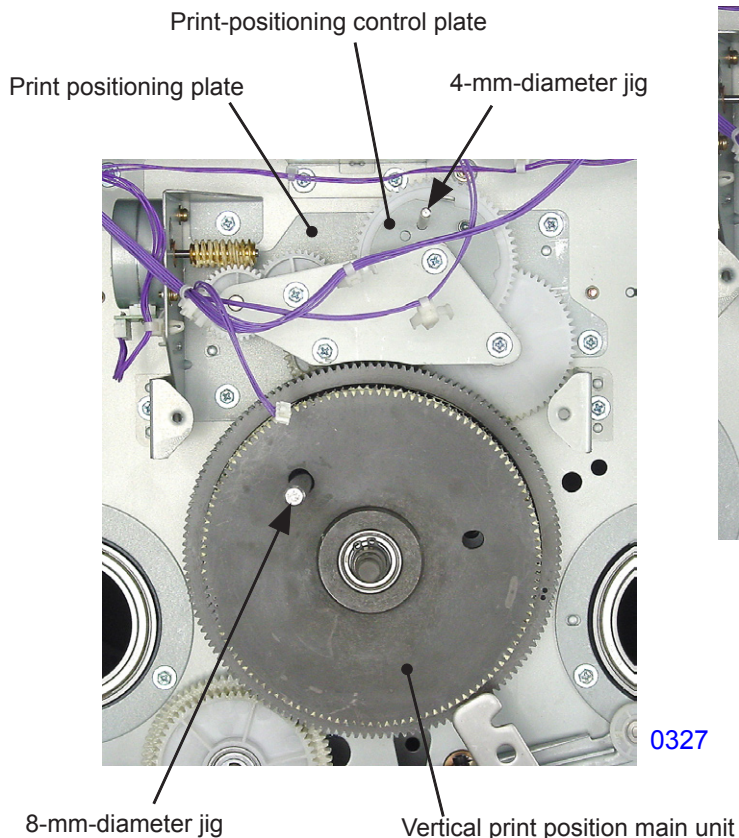


<< Procedure for installing drive system gears >>

- (1) Align the phase alignment holes of the vertical print position adjusting input gear assembly, vertical print position input gear, and vertical print position output gear of the vertical print position main unit. Insert the 8-mm-diameter jig into the holes.
- * Phase alignment holes of the vertical print position input gear and vertical print position output gear will align only once every four turns of the vertical print position output gear.
- (2) With the 4-mm-diameter jig inserted into the phase alignment holes of the print-positioning control plate and the print positioning plate, install the vertical print position main unit, confirming that the 8-mm-diameter jig inserted into the vertical print position main unit aligns with the phase alignment hole of the vertical print position drive shaft bearing plate.



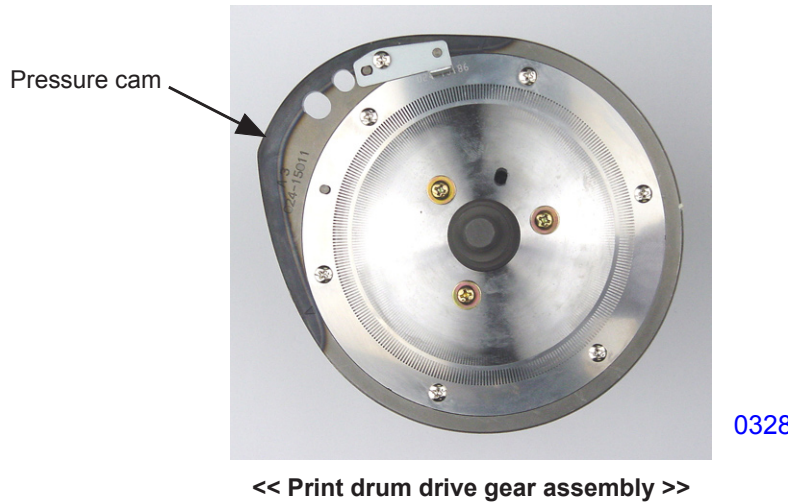
<< Vertical print position main unit >>



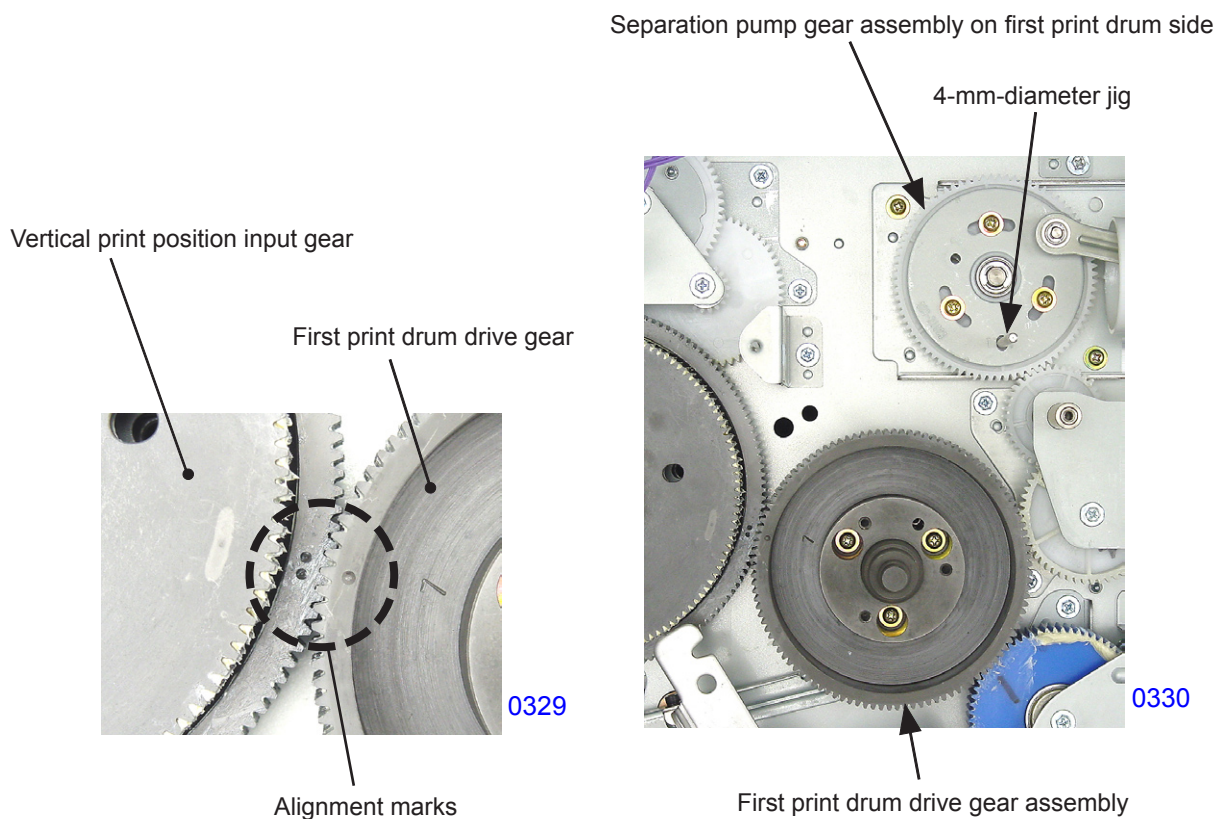
<< Precautions for installation >>

- When inserting the 4-mm-diameter jig, confirm that the master making unit is at the pull-out position.

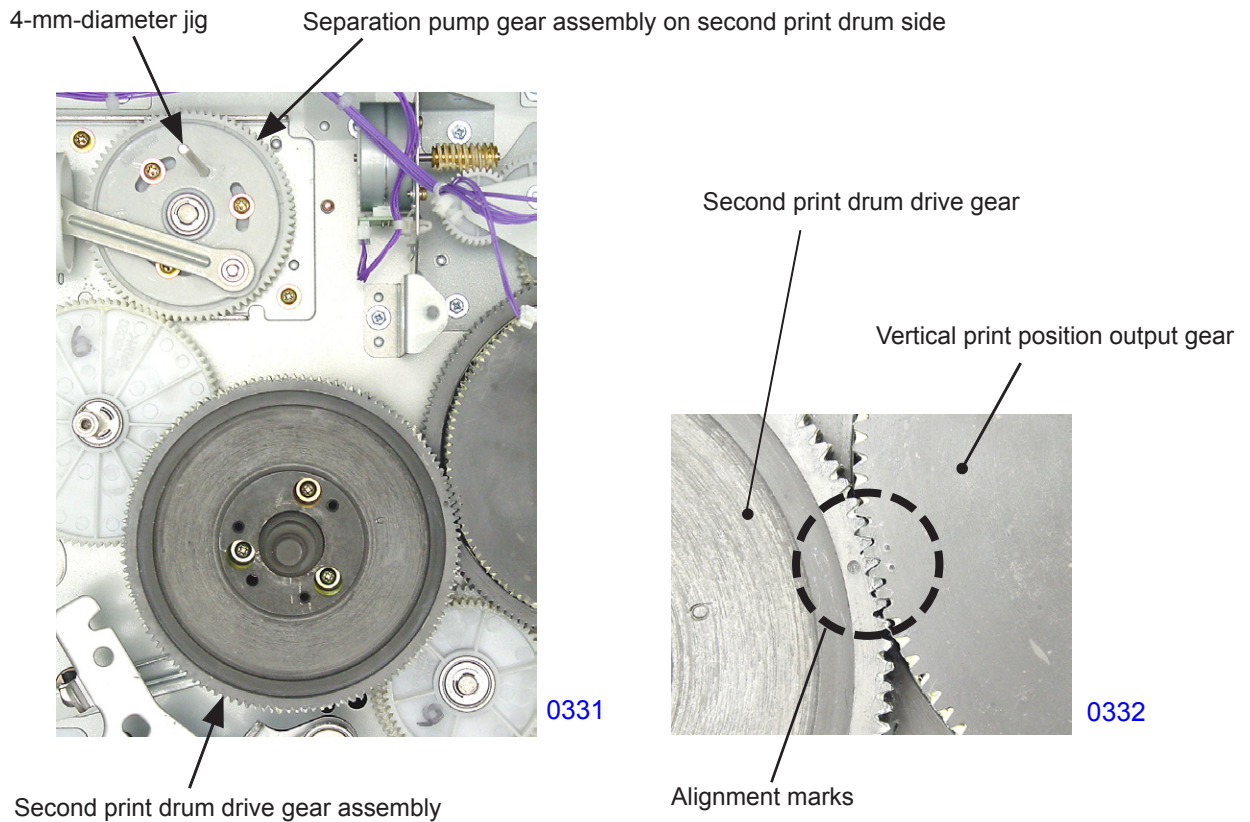
- (3) Since the gear alignment marks are not visible, remove the pressure cams of the first and second print drum drive gear assemblies. (with double-washer, M4 x 10, 3 pcs each).



- (4) With the 8-mm-diameter jig inserted into the vertical print position main unit, insert the 4-mm-diameter jig into the phase alignment hole of the separation pump gear assembly on the first print drum side, then align the marks on the vertical print position input gear and first print drum drive gear and attach the first print drum drive gear assembly.



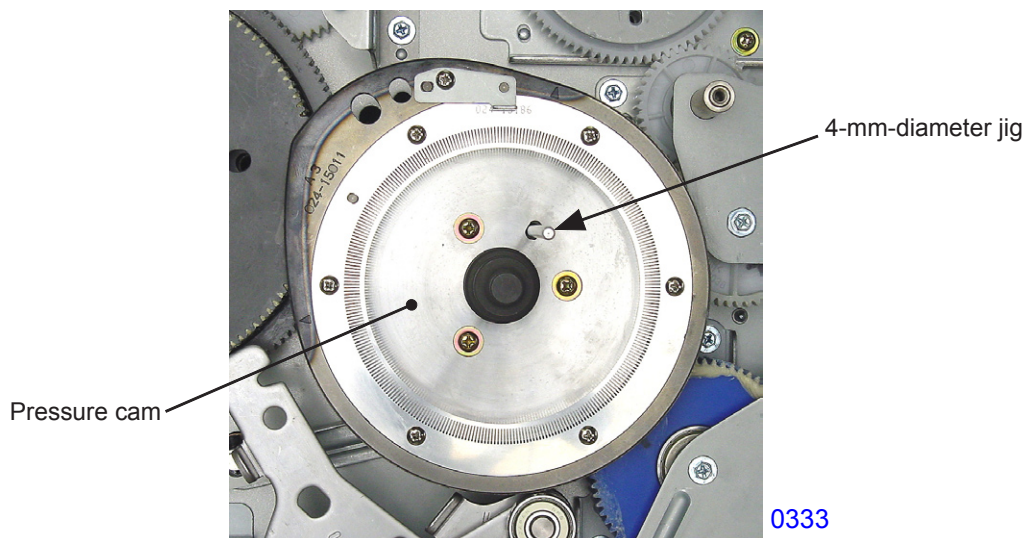
- (5) With the 8-mm-diameter jig inserted into the vertical print position main unit, insert the 4-mm-diameter jig into the phase alignment hole of the separation pump gear assembly on the second print drum side, then align the marks on the vertical print position output gear and second print drum drive gear and attach the second print drum drive gear assembly.



- (6) Install the pressure cams in the first and second print drum drive gear assemblies.

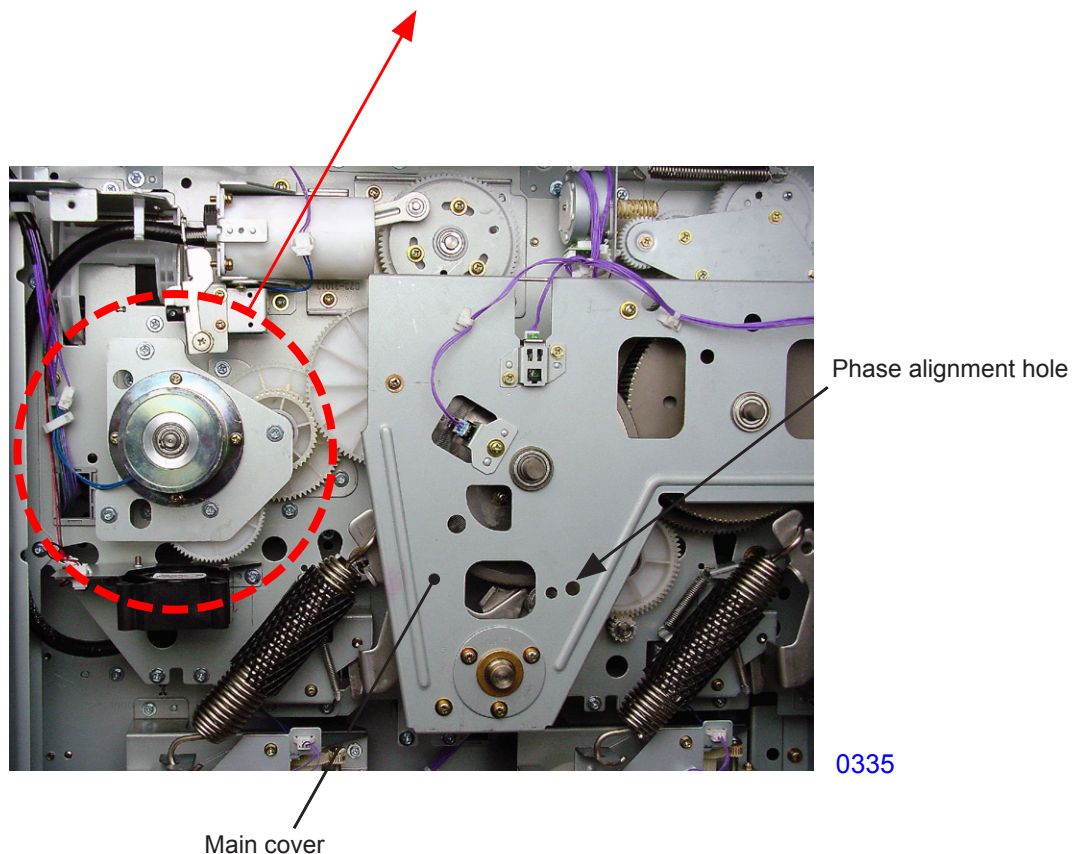
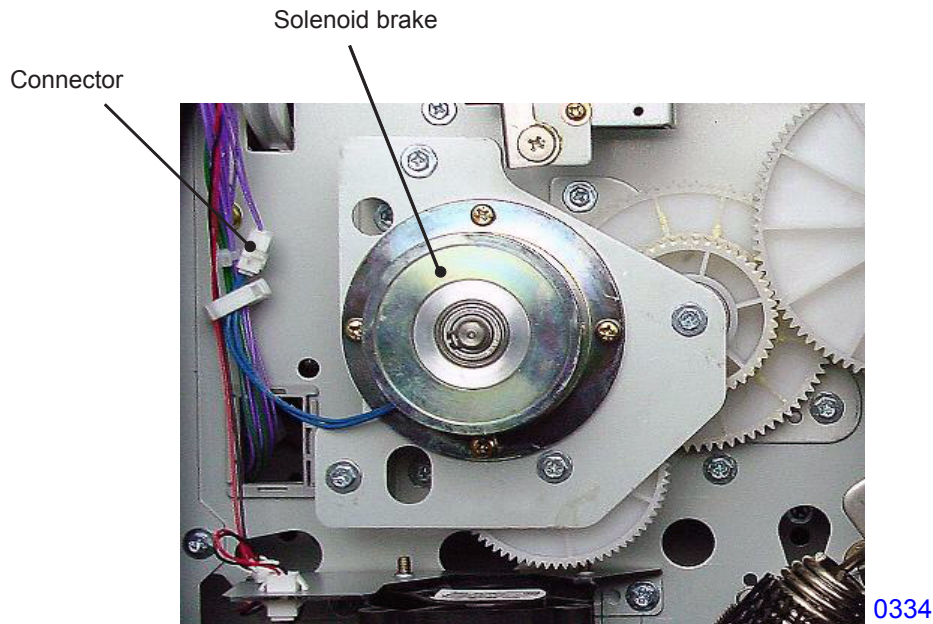
* In this step, insert the 4-mm-diameter jig into the phase alignment holes of the pressure cams and print drum drive gears to secure them in position.

- (7) Attach the main cover.



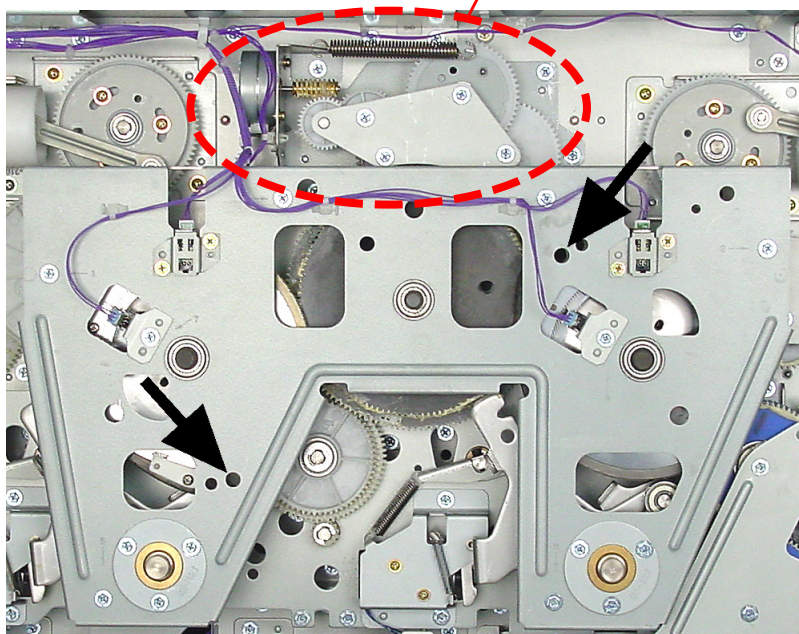
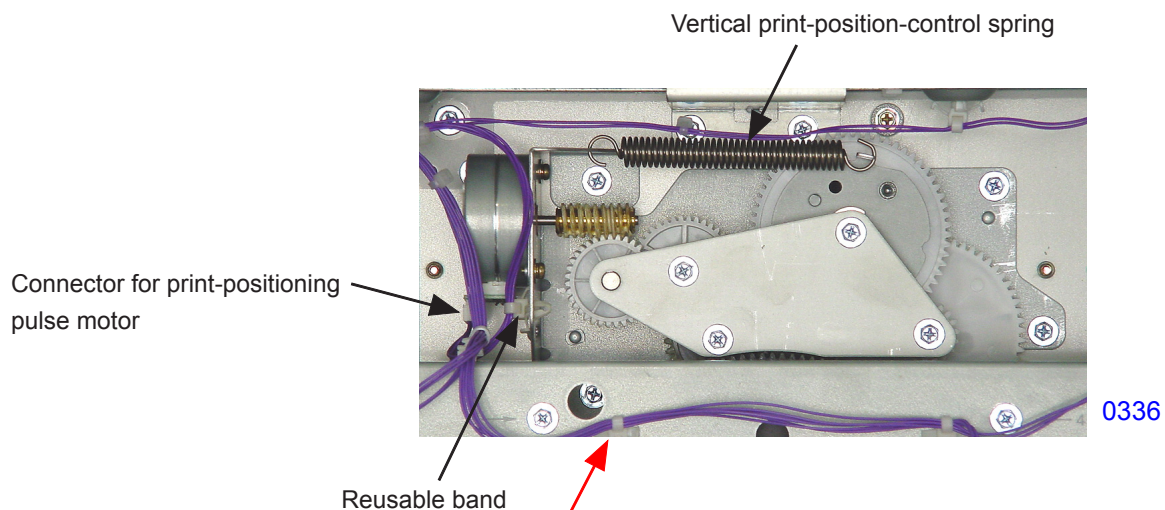
5. Removing the Solenoid Brake

- (1) Stop the first print drum at position-B, then switch OFF the machine power.
- (2) Remove the rear right cover and open the PCB bracket.
- (3) To keep the gears from turning, insert the 8-mm-diameter jig into the phase alignment holes of the main cover, pressure cam, and rear plate on the second print drum side. **This is for the safety of the serviceman.**
- (4) Remove the mounting screws (M4x10; 4 pcs). Unplug the connector and dismount the solenoid brake.



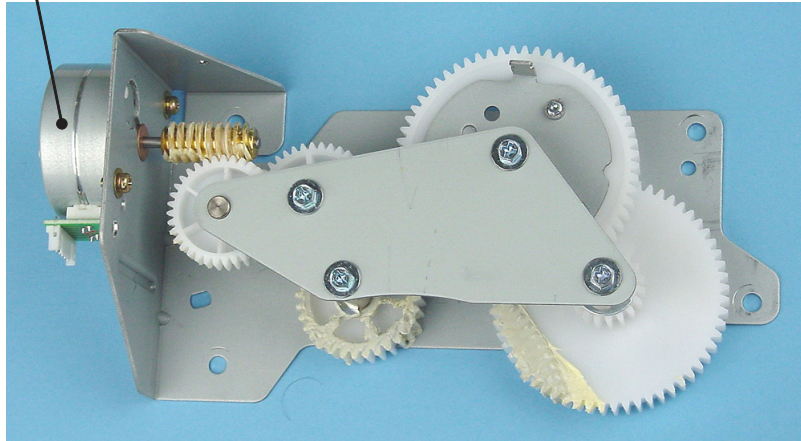
6. Removing the Print-positioning Pulse Motor

- (1) Remove the pressure springs, referring to the instructions on this chapter.
- (2) Close the PCB brackets and attach the rear right cover. (This is to switch ON the two rear cover safety switches to run the machine on next step.)
- (3) Rotate the first print drum to position-B, then switch OFF the machine power.
- (4) Remove the rear right cover and open the PCB bracket.
- (5) Insert the 8-mm-diameter jigs into the phase alignment holes on the main cover (indicated by the arrow marks on the bottom photo), pressure cams, and rear plate on both the first and second print drum sides.
- (6) Remove the vertical print-position-control spring.
- (7) Remove the mounting screws (M4x8; 4 pcs) and unplug the connector for the print-positioning pulse motor. Remove the reusable band and dismount the vertical print position adjusting unit.



- (8) Remove the mounting screws (with double-washer, M3x6; 2 pcs) and dismount the print-positioning pulse motor.

Print-positioning pulse motor

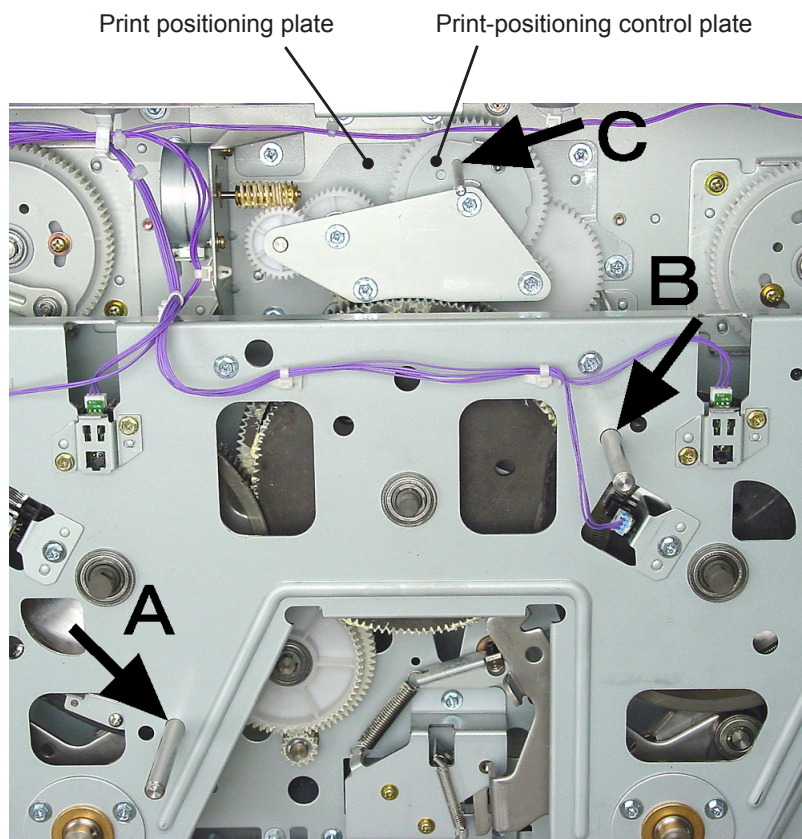


0338

<< Vertical print position adjusting unit >>

<< Precautions for installation >>

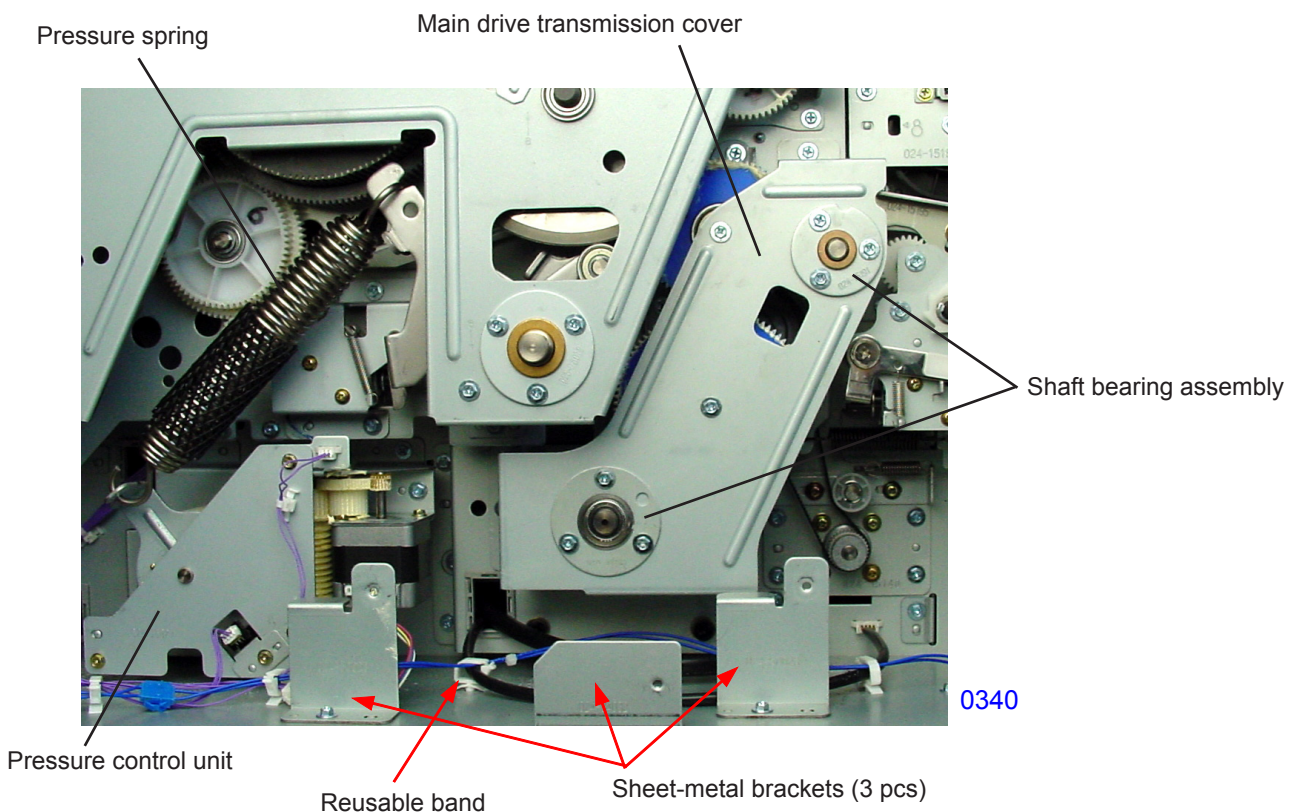
- With the 8-mm-diameter jigs (A, B) inserted into phase alignment holes on the main cover, pressure cams, and rear plate of both the first and second print drum sides, insert the 4-mm-diameter jig (C) into the phase alignment holes on the print-positioning control plate and print positioning plate. Install after aligning the phases of the drive system gear and vertical print position adjusting unit.



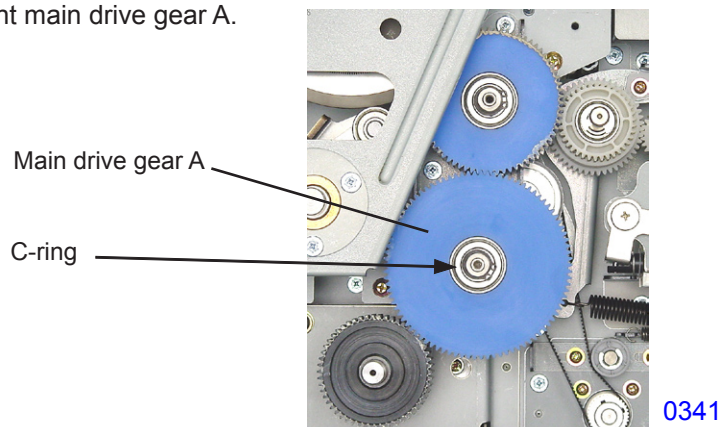
0339

7. Removing the Main Motor

- (1) Switch off power.
- (2) Remove the rear left and rear right covers and open the PCB brackets.
- (3) Remove the two pressure springs, referring to the instructions on this chapter.
- (4) Remove the three sheet-metal brackets at the bottom base of the machine, indicated by the three red colored arrow marks on the photograph below.
- (5) Detach one wire harness reusable band from the bottom base of the machine, indicated by red colored arrow mark on the photograph below.
- (6) Remove the mounting screws (M4x8; 4 pcs) from the pressure control unit and push the unit away to the left to make working space.
- (7) Remove the two shaft bearing assembly by removing screws (M4x8; 3 pcs each), then remove the main drive transmission cover (M4x8 screws; 5 pcs).

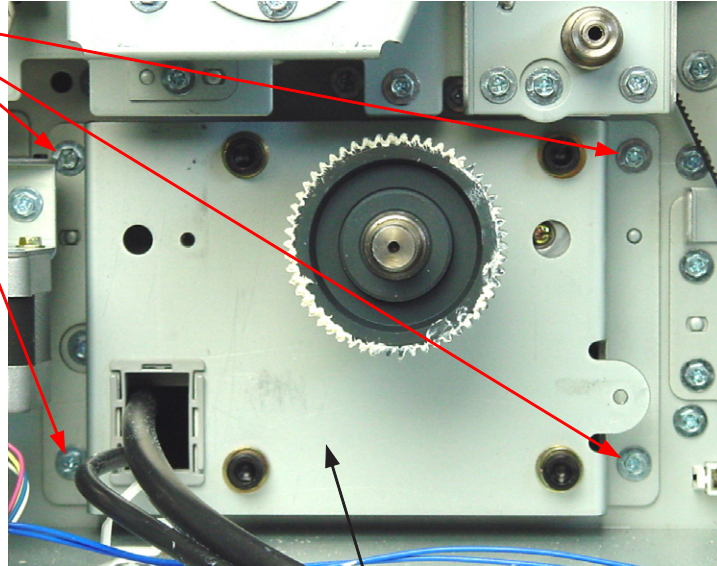


- (7) Remove the C-ring and dismount main drive gear A.



- (8) Unplug the two connectors, remove the mounting screws, and dismount the main motor (RS tight with round tip, M4 x 8, 4 pcs).

Mounting screws



0342

Main motor

<< Note >>

If the main motor is replaced, <main motor parameter acquisition> adjustment must be performed.

[Procedure]

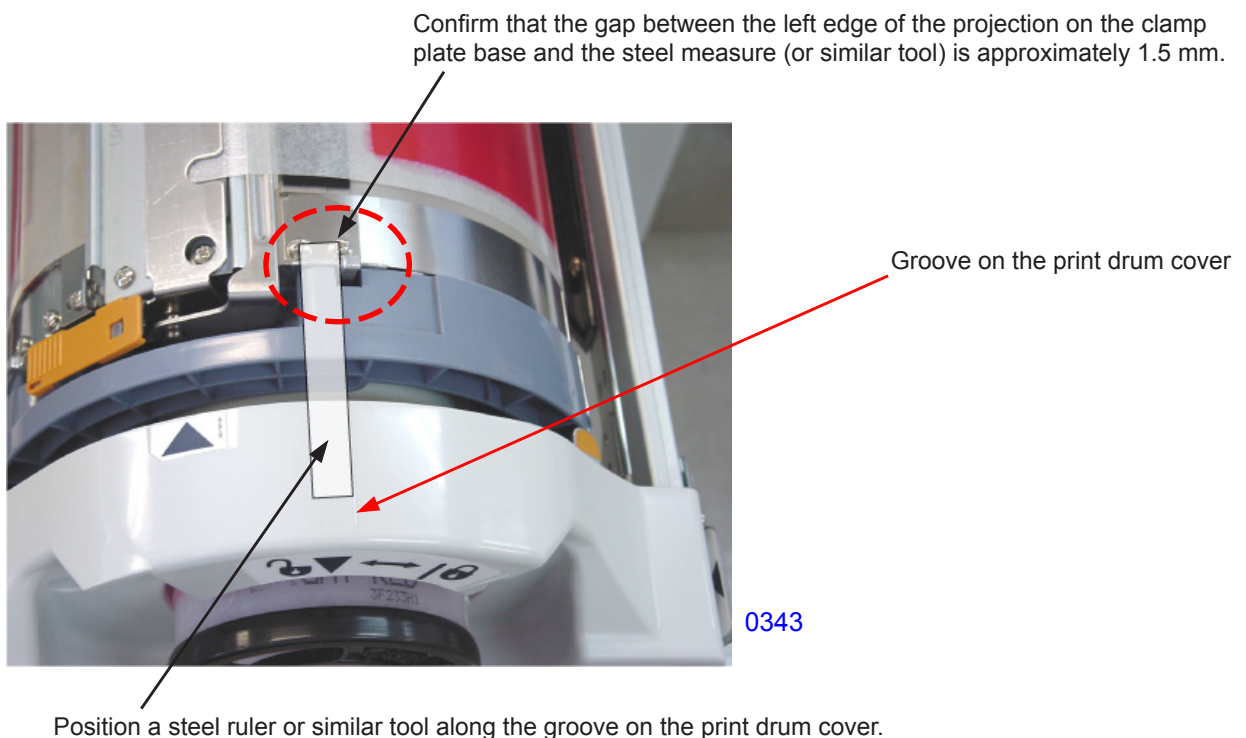
- (1) Insert both the first and second print drums in the machine.
 - (2) Activate test mode and input 9874 and press START key to go into protected area test mode.
 - (3) Run test mode No.1105 (Main motor parameter acquisition mode).
 - (4) Check the panel display to confirm that the process is complete, and then escape from the test mode.
- This procedure is explained in <Chapter 17: Other Precautions>.

Adjustment

1. Print Drum Position-A Adjustment

Adjustment procedures

- (1) Open the front door.
- (2) Launch test mode and run Test Mode No. 881 (Position-A action of the print drum).
- (3) Confirm that the stamped mark on the print drum cover is within plus or minus 1° of the left edge of the projection on the clamp plate base.
- (4) If the measurement fails to meet this standard, run Test Mode No. 941 (Print-drum Position-A adjustment) and adjust print drum position-A.
- (5) Repeat the steps from (2).



2. Print Drum Position-B Adjustment

Adjustment procedures

- (1) Make one print with the print drum to be adjusted to confirm that the print drum drive is joined with the machine drive. Then open the front door.
- (2) Activate test mode No.892 (Machine position-B stop) on the print drum to be adjusted, and after the machine stops, using a screw driver or a shaft, manually unlock the print drum from the machine.
- (3) Confirm that the print drum comes out and goes into the machine smoothly.
- (4) If the print drum does not move smoothly in and out, run Test Mode No. 942 (Print-drum position-B adjustment) and adjust print drum position-B.
- (5) Repeat from step (2) until good adjustment is made.

CHAPTER 4: FIRST PAPER FEED SECTION

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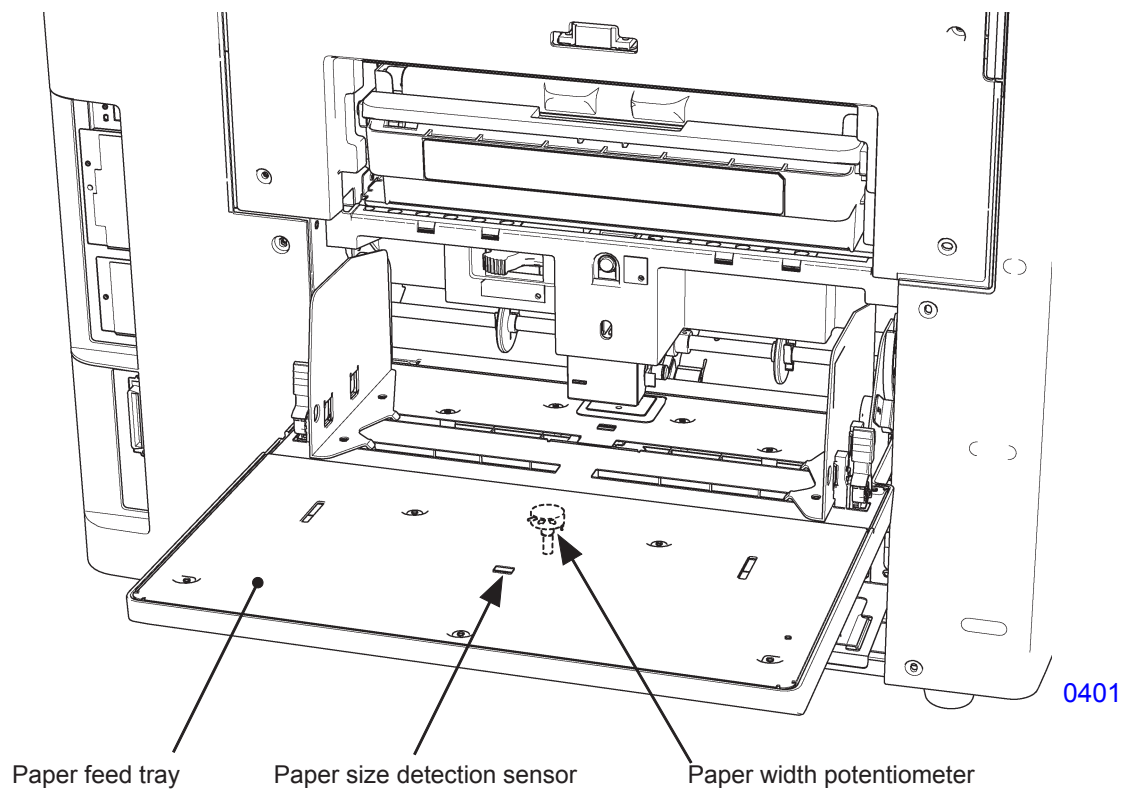
Mechanism

1. Paper Feed Tray Mechanism

The paper feed tray is equipped with a paper width potentiometer and a paper size detection sensor to determine the size of paper placed in the paper feed tray.

The paper width potentiometer detects the paper width, while the paper size detection sensor identifies the paper length, and whether the paper is positioned vertically or horizontally.

Since the horizontal print position is adjusted by the print drum movement, the paper feed tray does not move horizontally.



2. Paper Feed Tray Elevation Mechanism

The paper detection sensor detects the presence of paper in the paper feed tray.

When the paper detection sensor is detecting the paper on the paper feed tray, pressing the START key switches ON the elevator motor and lifts the paper feed tray. The paper feed tray elevates until the upper-limit sensor activates. Two upper limit sensors exist. The upper-limit sensor A is for the upper limit position for feeding thick card papers. The upper-limit sensor B is for feeding normal thickness papers. The details on the two upper-limit sensors, A and B, are explained on the next page.

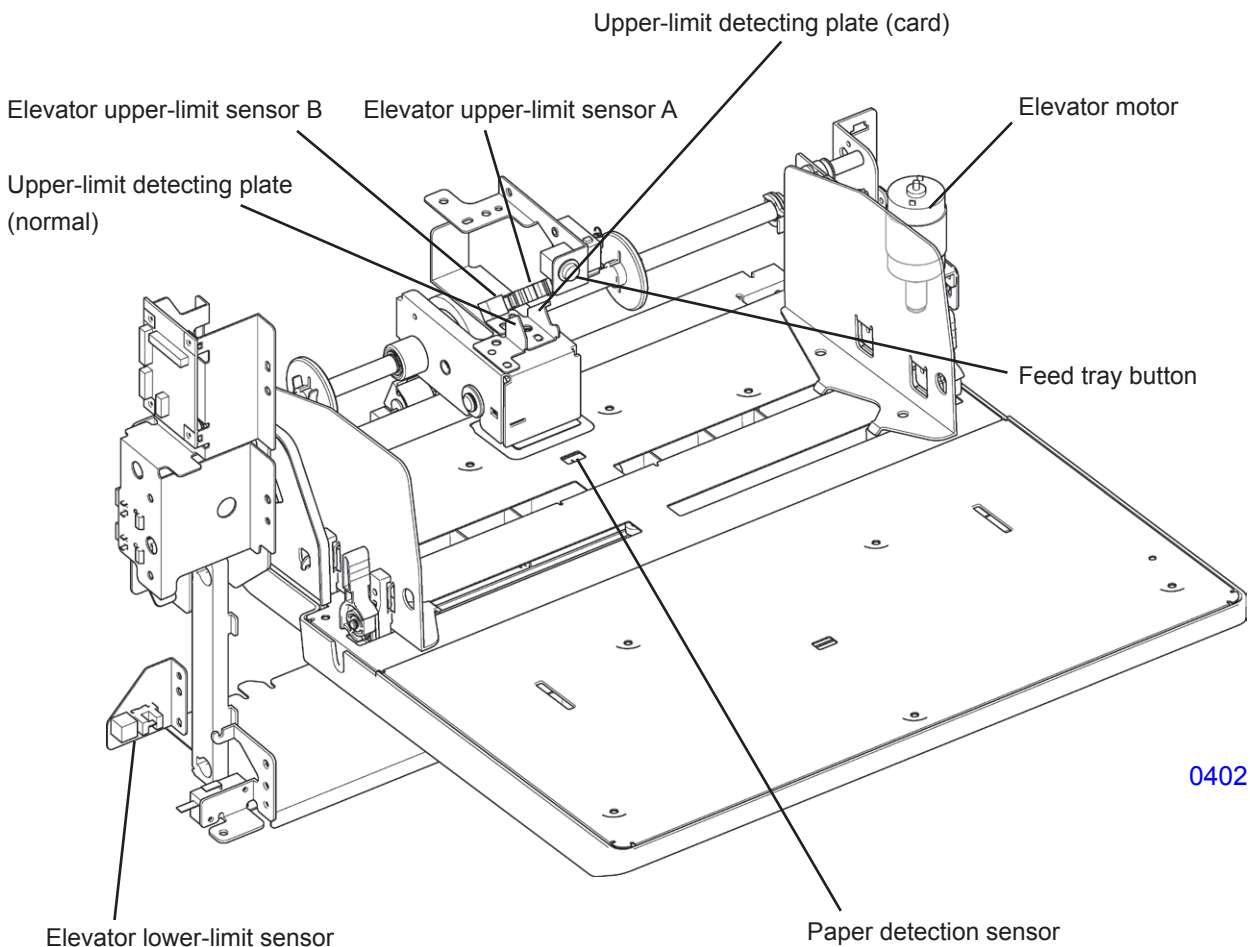
During the printing operation, the elevator motor keeps switching ON and OFF, to elevate the paper feed tray to keep the upper most paper stock height on the paper feed tray at a constant height to ensure good paper feeding.

When the paper runs out from the paper feed tray and the paper detection sensor no longer sees the paper on the tray, the elevator motor switches ON and lowers the paper feed tray all the way down to the lower-limit position. The lower limit position of the paper feed tray is detected by the lower-limit sensor.

While the machine is in the standby condition with the paper on the paper feed tray, pressing the Feed tray button, for 0.7 seconds or less, activates the elevator motor to bring the paper feed tray down. The tray moves down until detected by the lower-limit sensor, or until the button is pressed again.

In the same condition, if the Feed tray button is pressed for more than 0.7 seconds, the paper feed tray elevates down until the button is released. The tray stops when the finger is released from the button.

When the paper feed tray is at the lower limit position with paper on the tray, pressing the Feed tray button elevates the tray up.



<< Upper-limit Position of the Paper Feed Tray >>

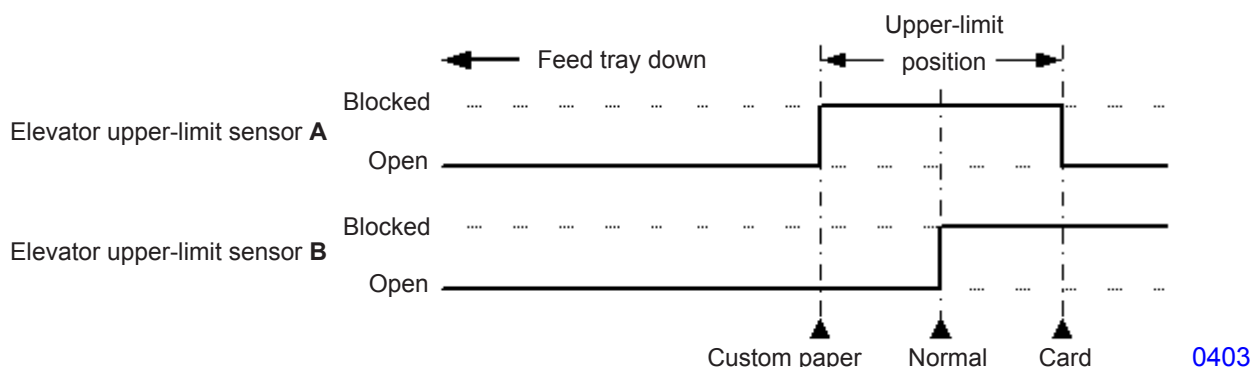
There are two elevator upper-limit sensors, A and B. The elevator upper-limit sensor B is paired with the upper-limit detecting plate (normal), while the elevator upper-limit sensor A is paired with the upper-limit detecting plate (card). From the various combination of these two upper-limit sensor detections, three paper feed tray upper-limit positions are possible, as shown in the diagram below.

Selecting the upper limit position by the Test Mode:

Selecting [Auto], *the default setting*, in Test Mode No. 740 (Elevator upper-limit position selection) makes it possible to adjust the paper feed tray upper-limit position using the paper feed pressure lever. Setting the paper feed pressure lever to <Normal> sets the upper-limit position of the paper feed tray to the normal position. Setting the paper feed pressure lever to <Card> sets the upper-limit position of the paper feed tray to the card position. Selecting a setting other than [Auto] by this test mode elevates the paper feed tray to the specified upper limit position, which are Card, Normal or Custom position. Card being the highest position and Custom being the lowest position of the three.

Selecting the upper limit position by the User Mode: (Paper Feed Adjustment in the Function tab.)

Selecting the paper feed tray upper-limit position to <0> using the [Manual] adjustment, in the Paper Feed Adjustment within the Function tab of the operation panel, stops the paper feed tray at the Normal position. Selecting this to <+1> stops the paper feed tray at the Card position. Selecting <-1> stops the paper feed tray at the Custom position.

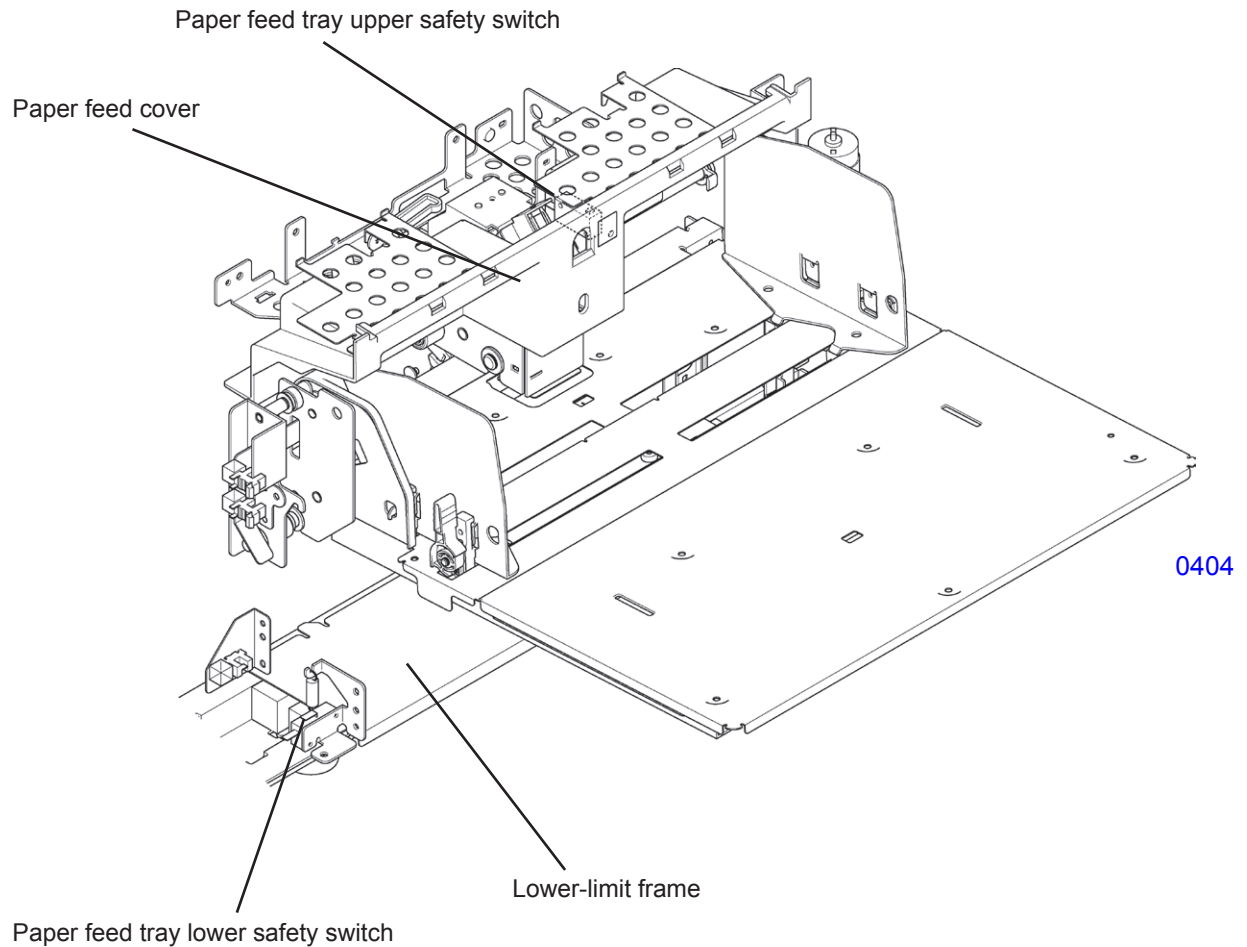


0403

3. Paper Feed Tray Safety Mechanism

The paper feed tray upper safety switch and the paper feed tray lower safety switch ensure safety while the paper feed tray is rising or stationary.

Lifting the paper feed cover triggers the paper feed tray upper safety switch. Pressing down the lower-limit frame triggers the paper feed lower safety switch. If either one of the two safety switches triggers, a paper feed tray error is detected and the elevator motor switches OFF.



4. Paper Volume Detection Mechanism

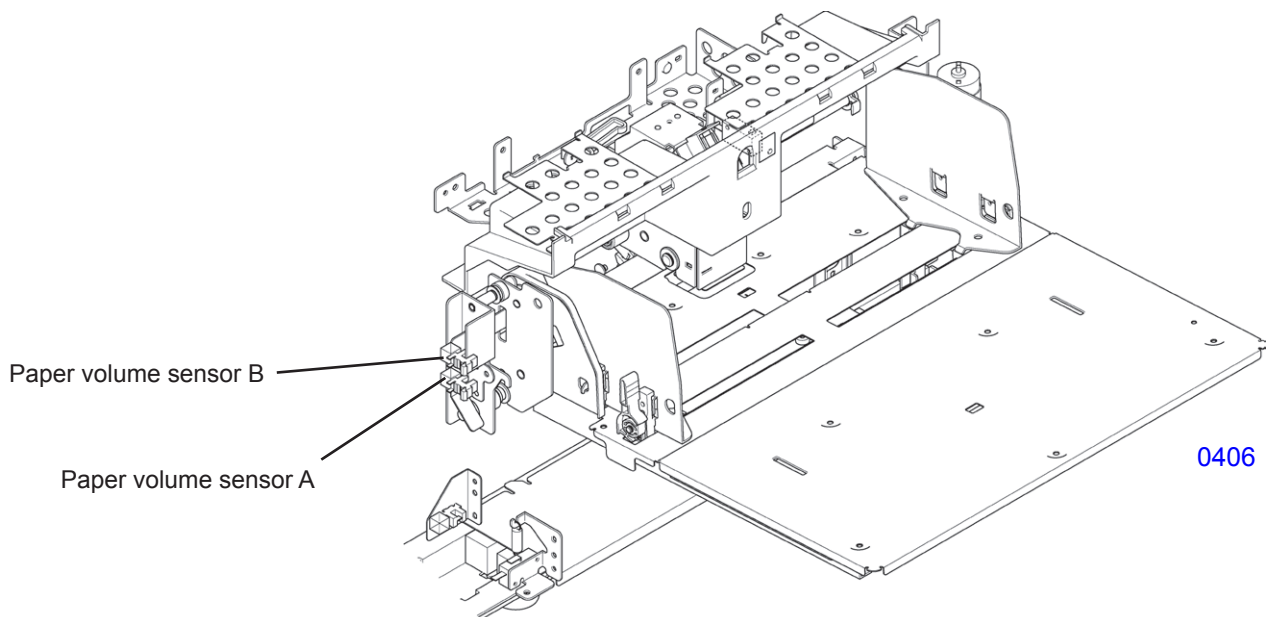
Two sensors (Paper volume sensor A and Paper volume sensor B) detect the volume of paper remaining in the paper feed tray when the paper feed tray is at the upper-limit position.

If the paper feed tray is not at the upper-limit position, the remaining paper volume is indicated as <Undetectable>.

Paper volume and remaining paper volume sensor operations:

Volume of remaining paper	Sensor status	
	Paper volume sensor A	Paper volume sensor B
100% to 50%	OFF	OFF
50% to 30%	ON	OFF
30% to 10%	ON	ON
Less than 10%	OFF	ON

0405



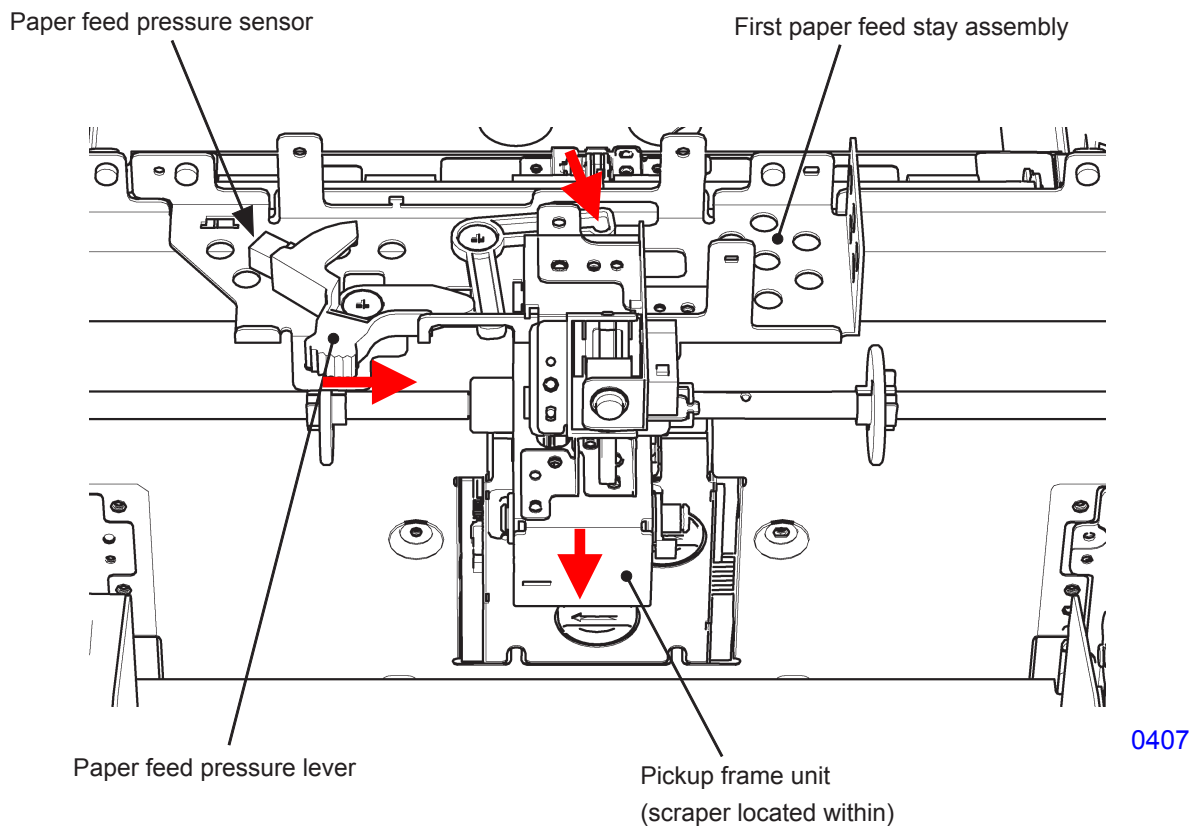
0406

5. Paper Feed Pressure Adjustment Mechanism

The paper feed pressure lever is located on the left-hand side of the first paper feed stay assembly. Sliding this lever L ↔ R adjusts the paper feed pressure (scraper pressure) between <Normal> (low) and <Card> (high).

Setting the paper feed pressure lever to the right for <Card> increases paper feed pressure (scraper pressure).

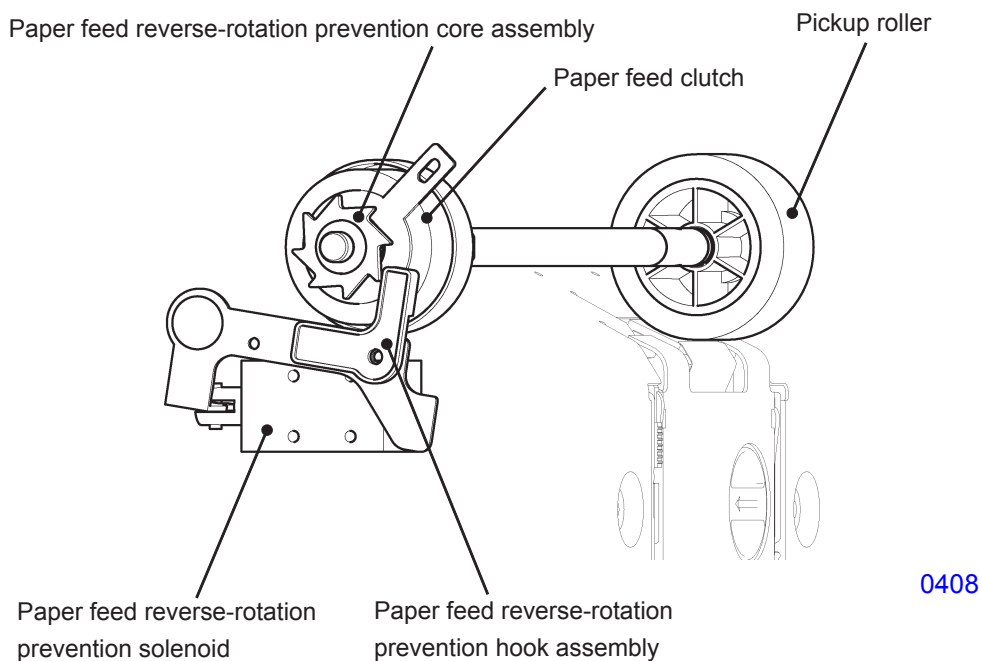
The paper feed pressure sensor checks the position of the paper feed pressure lever and switches the paper feed clutch OFF angle, switches the paper feed reverse-rotation prevention solenoid ON-OFF, and adjusts the paper ejection wing position.



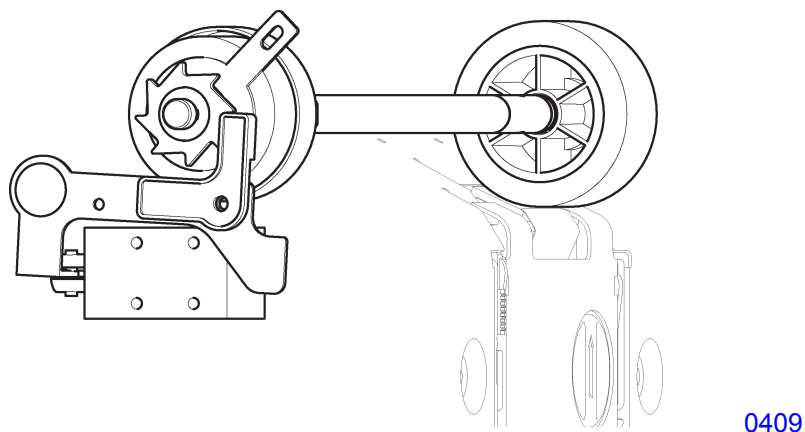
6. Paper Feed Reverse-Rotation Prevention Mechanism

The high resilience of thick paper stock can produce a force that reverses the rotation of the pickup roller if the paper feed clutch is switched OFF, even when the paper feed operation provides a certain amount of slack. This may eliminate slack in the paper and cause a paper feed failure. To prevent reverse rotation of the pickup roller, the paper feed reverse-rotation prevention solenoid remains ON during printing when the paper feed pressure lever is set to <Card>, and the paper feed reverse-rotation prevention hook assembly is engaged to the paper feed reverse-rotation prevention core assembly.

<< Paper feed pressure lever set to <Normal> >>



<< Paper feed pressure lever set to <Card> >>



7. Initial Paper Feed Operation

At the start of a print job, the main motor switches ON and rotates the print drum via main drive gears A and B.

The paper feed clutch gear rotates continuously when the main motor is ON.

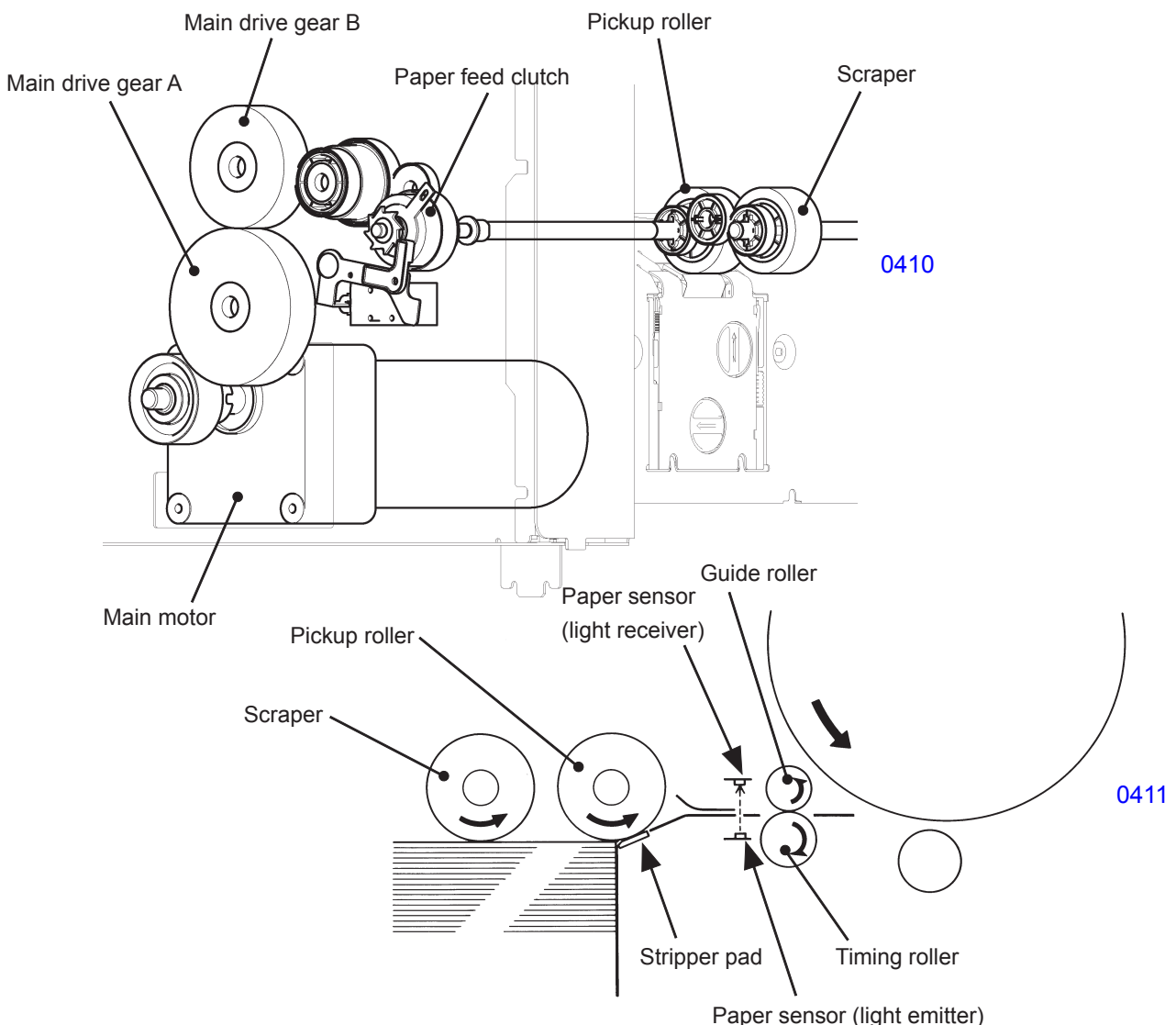
When the print drum rotates from position-B to a certain angle (angle set by adjusting the paper feed clutch ON angle during test mode or by the custom paper feed ON timing), the paper feed clutch switches ON, turning the scraper and pickup roller and transporting paper from the paper feed tray into the machine.

When the print drum rotates through a certain angle (angle set by adjusting the paper feed clutch OFF angle in test mode or by the amount of slack set during custom paper feed adjustment) after the paper is fed into the machine and the paper sensor senses light, the paper feed clutch switches OFF, and the first paper feed operation stops.

In this process, the leading edge of the paper contacts the guide roller and timing roller. When paper transport stops, some slack is left in the paper.

Additionally, when the print drum rotates to the paper feed jam detection angle/IN angle after the paper feed clutch switches ON, the machine polls the paper sensor for a paper failure feed error.

The scraper and pickup roller are equipped with a one-way clutch to enable free rotation and to keep the first paper feed section from halting or slowing paper feeding after the paper is fed to the second paper feed section.

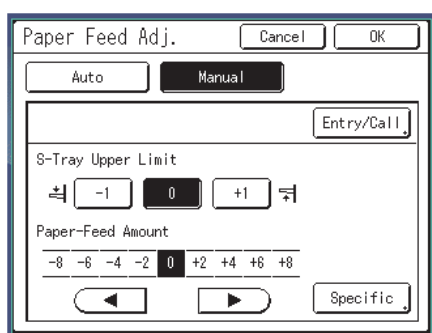


8. Paper Feed Adjustment (from the Function tab of the operation panel)

From the Function tab of the LCD display, chose the Paper Feed Adj. button and open the paper adjustment screen. By selecting the Manual button, the screen shown as Fig.1, below, appears. The paper feed tray upper limit position and paper buckle amount can be adjusted. The adjustment can be registered for maximum of six (6) custom papers. The Fig.1 screen is for adjusting the paper-feed-tray upper limit position and the paper buckle amount. By pressing the Specific button at the bottom-right-hand-corner of the screen (Fig.1), the screen changes (ref: Fig.2). The Fig.2 screen has the adjustment values for the Paper feed clutch ON and OFF timing adjustment. The clutch OFF timing value on Fig.2 screen corresponds with the Fig.1 screen paper-feed amount, and vice versa, except the Fig.2 screen has wider clutch OFF timing adjustable range. The clutch ON timing value on Fig.2 screen is independent from Fig.1 screen adjustment. Press OK button after making the adjustment. The screen changes to as shown by Fig.3. The adjusted values are registered, up to six, by using the <A-1> to <A-6> buttons, as shown on Fig.3.

In printing operation, by recalling one specific button from <A-1> to <A-6>, the registered upper limit position of the paper feed tray and the paper buckle amount can be selected for special paper, which does not feed well by normal setting. The selected paper feed adjustment setting is applied on the printing job until the machine power is turned OFF, Auto key is re-selected by the Fig.1 screen, or if the Admin. tab is opened.

Fig. 1



0468

Adjustments made by the Fig.1 Screen

< Straight-Feed Tray Upper Limit Position >

Selects the stop position of the paper feed tray.

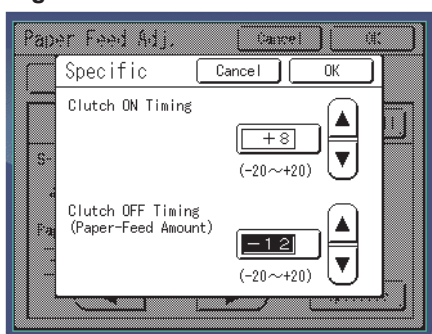
- + 1 : Card paper position..... High
- 0 : Standard paper position..... Standard
- 1 : Custom paper position Low

< Paper Buckle Amount >

Selects the Paper feed clutch OFF timing in regard to the pre-programmed print drum angle.

- Adjustable range: - 8 degrees to + 8 degrees.
- (Adjustable by unit of 2 degrees.)

Fig. 2



0469

Adjustments made by the Fig.2 Screen

< Paper Feed Clutch ON Timing >

Selects the Paper feed clutch ON timing in regard to the pre-programmed print drum angle

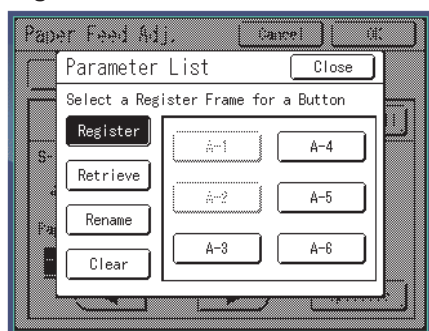
- Adjustable range: - 20 degrees to + 20 degrees.
- (Adjustable by unit of 1 degree.)

< Paper Feed Clutch OFF Timing >

Selects the Paper feed clutch OFF timing in regard to the pre-programmed print drum angle

- Adjustable range: - 20 degrees to + 20 degrees.
- (Adjustable by unit of 1 degree.)

Fig. 3



0470

Precaution:

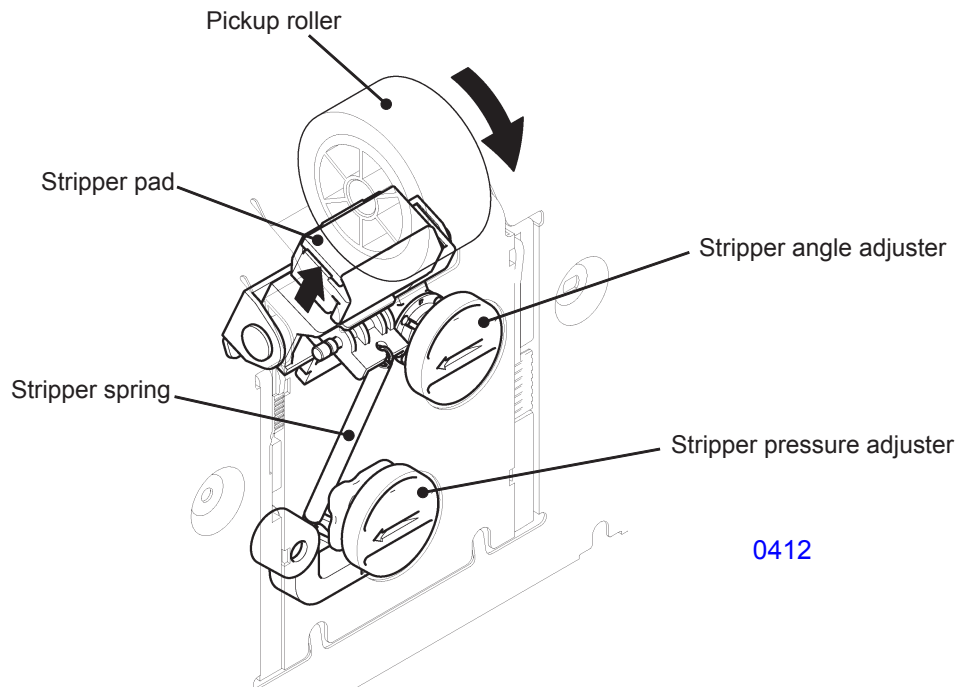
Changing the values by Test mode No. 741 (Paper feed clutch ON timing adjustment) and No. 742 (Paper feed clutch OFF timing adjustment) will change the pre-programmed print drum angle and therefore affects the above adjusted clutch ON and OFF timing.

9. Paper Stripper Mechanism

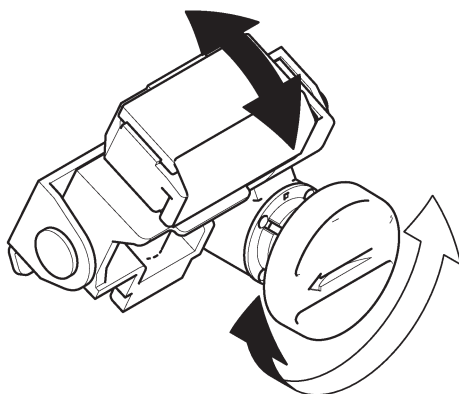
The scraper and pickup roller rotate to transport paper from the paper feed tray to the stripper pad. The pickup roller and the stripper pad loosen the stacked paper and transport the uppermost sheet into the machine.

The stripper pad is pressed against the pickup roller by the stripper spring, which applies resistance to the paper being transported to ensure only a single sheet of paper is fed at a time.

Use the stripper angle adjuster and stripper pressure adjuster to adjust the stripper pad angle and stripper spring pressure, if necessary.

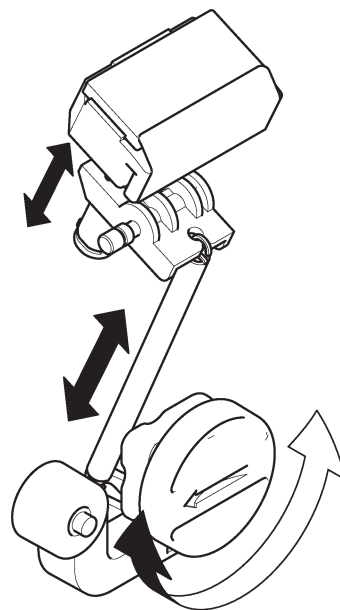


0412



0413

<< Adjustment of the stripper angle >>



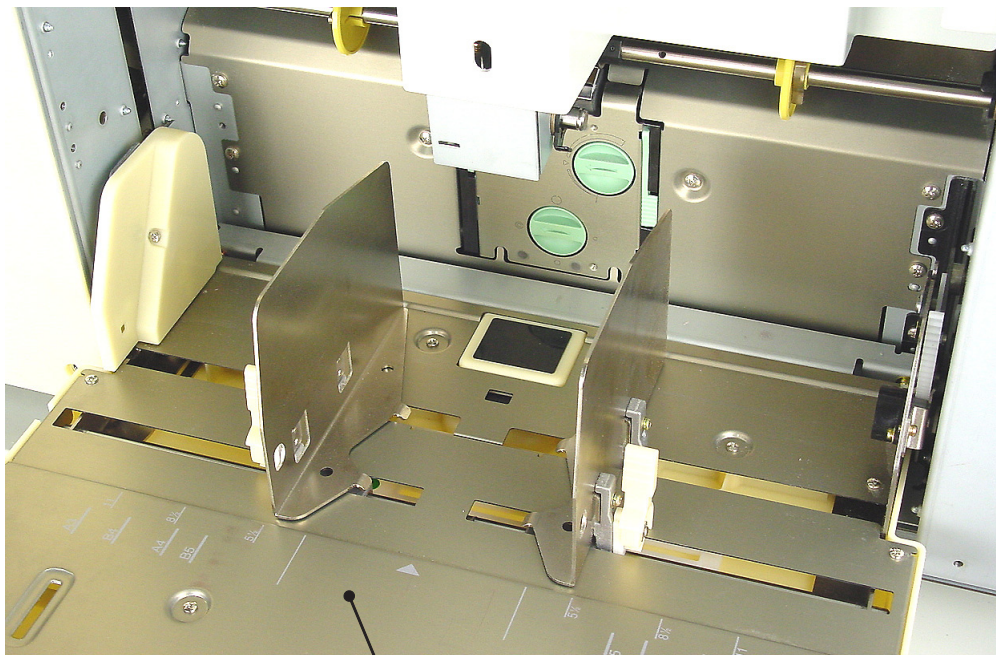
0414

<< Adjustment of the stripper pressure >>

Disassembly

1. Removing the Paper Feed Tray Unit

- (1) Lower the paper feed tray to the lower-limit position, then switch OFF the machine power.
- (2) Remove the ribbon cable cover. (bind, M3 x 6, 1 pc)
- (3) Disconnect the ribbon cable from the connector and remove the ribbon cable holder from the paper feed tray frame (rear).
- (4) Remove the E-rings (one each) from the front and rear sides and detach the paper feed tray retaining plates (one each). Dismount the paper feed tray unit.



Paper feed tray unit

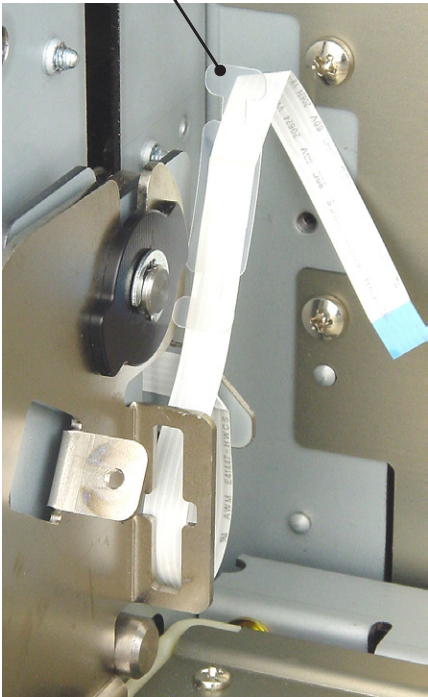


Ribbon cable cover



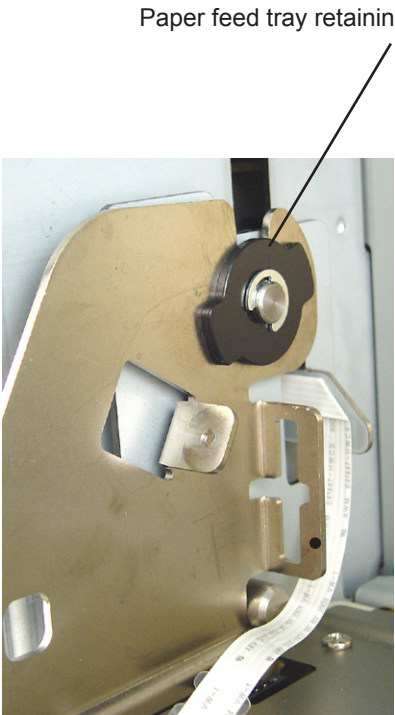
0417

Ribbon cable Connector



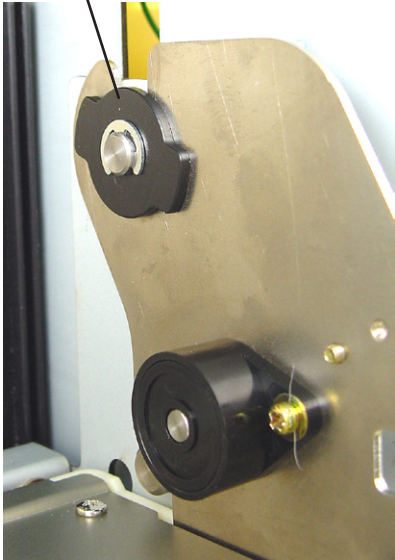
0418

Ribbon cable holder



0419

Paper feed tray retaining plate



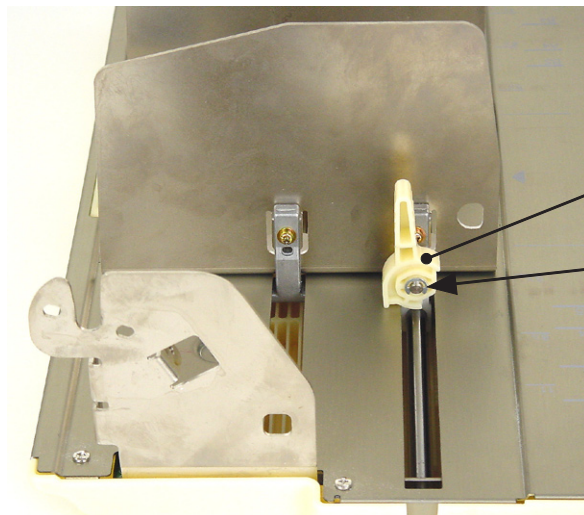
0420

Paper feed tray retaining plate

Paper feed tray frame (rear)

2. Removing the Paper Det. Sensor, Paper Size Det. Sensor, and Paper Width Potentiometer

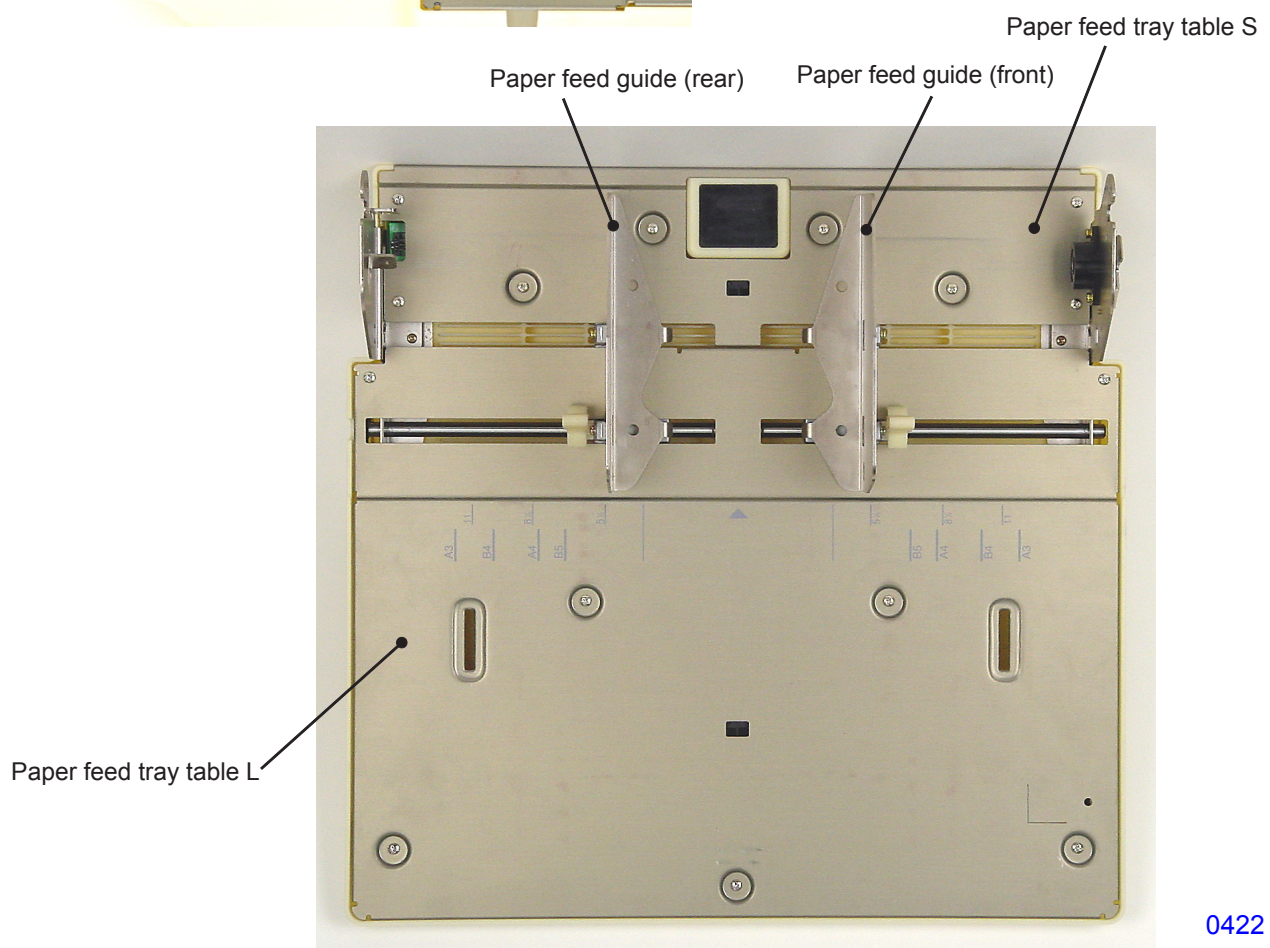
- (1) Lower the paper feed tray to the lower-limit position, switch off power, and dismount the paper feed tray unit.
- (2) Remove the E-rings and paper guide lock levers (on both the front and rear sides).
- (3) Remove the mounting screws (M3x8; 2 pcs each) and dismount the paper feed guide (front) and the paper feed guide (rear).



Paper guide lock lever

E-ring

0421



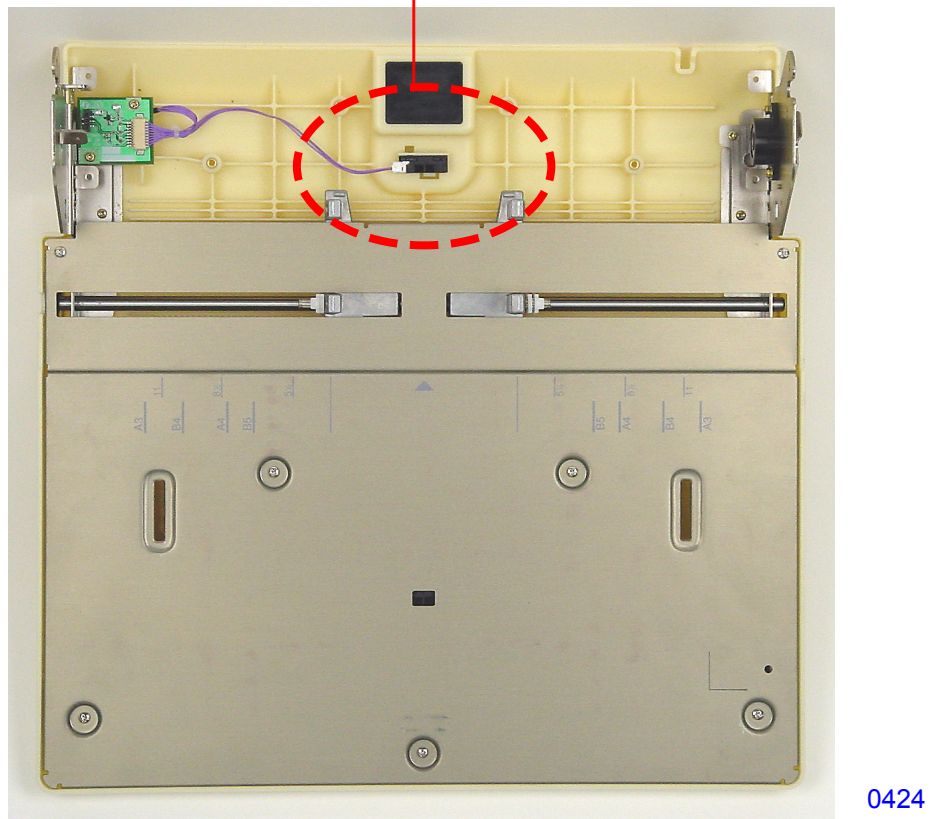
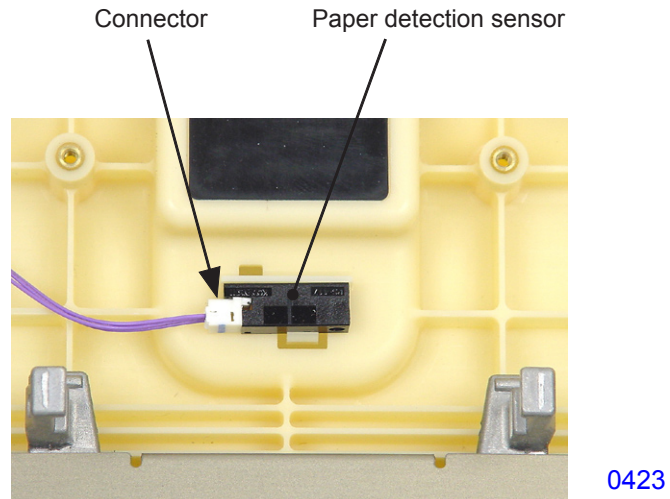
Paper feed tray table L

0422

<< Paper feed tray unit >>

Removing the paper detection sensor

- (4) Remove the mounting screws (M3x6; 8 pcs) and dismount paper feed tray table S.
- (5) Unplug the connector and remove the paper detection sensor.



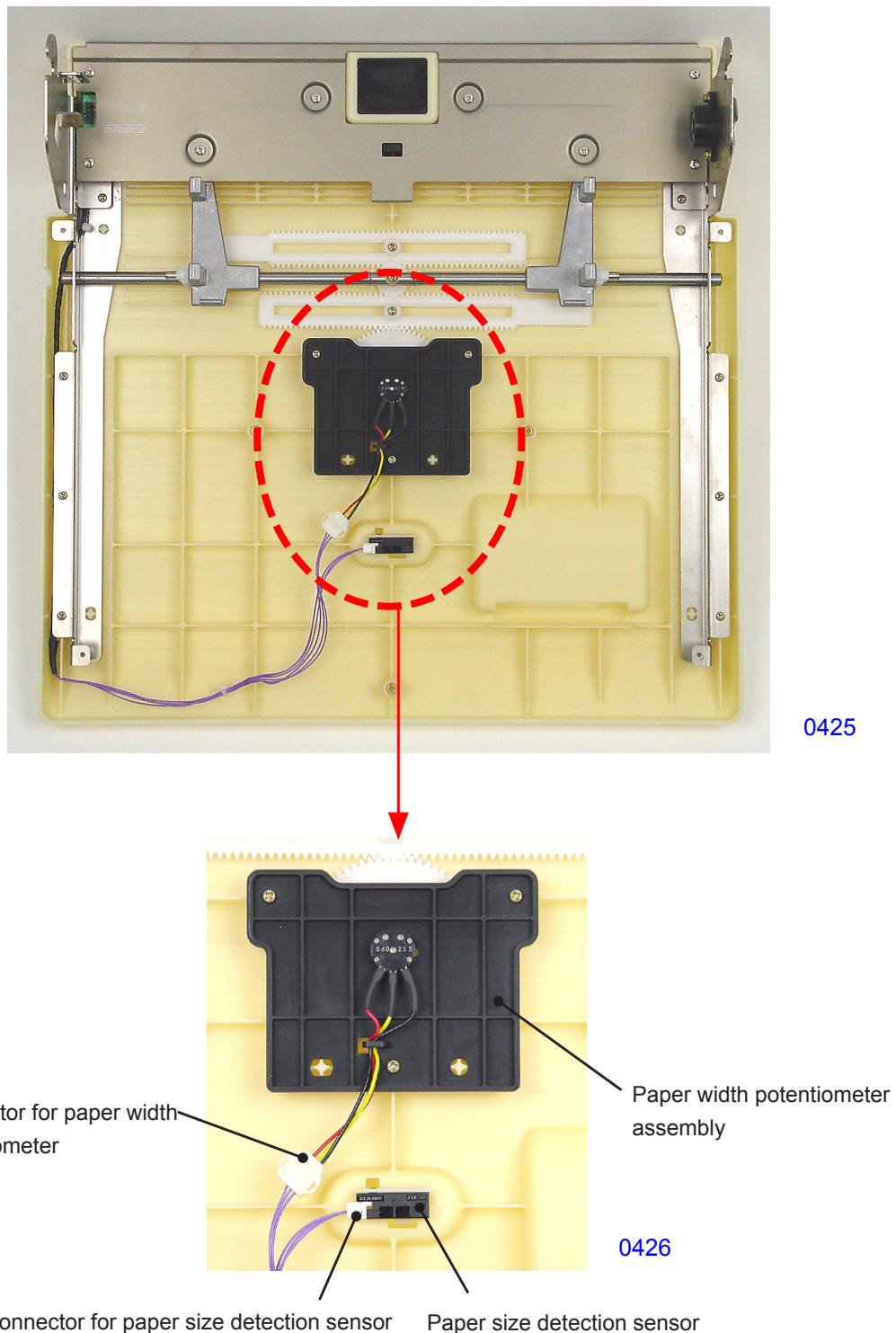
- (4) Remove the mounting screws (M3x6; 7 pcs) and dismount paper feed tray table L.

Removing the paper size detection sensor/paper width potentiometer

- (5) Unplug the connector and remove the paper size detection sensor.

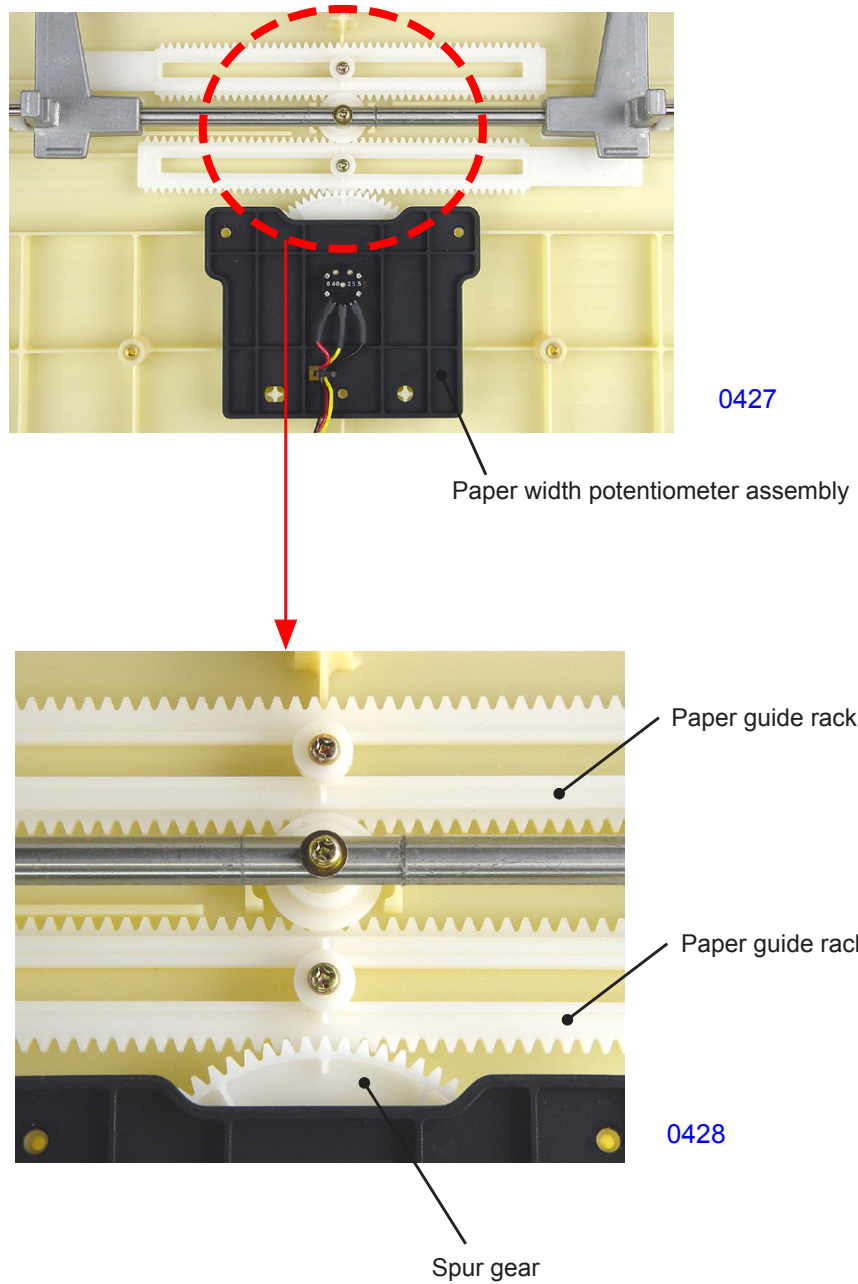
Removing the paper width potentiometer

- (5) Unplug the connector and remove the mounting screws (M3x8; 3 pcs). Dismount the paper width potentiometer assembly.



<< Precautions for installation >>

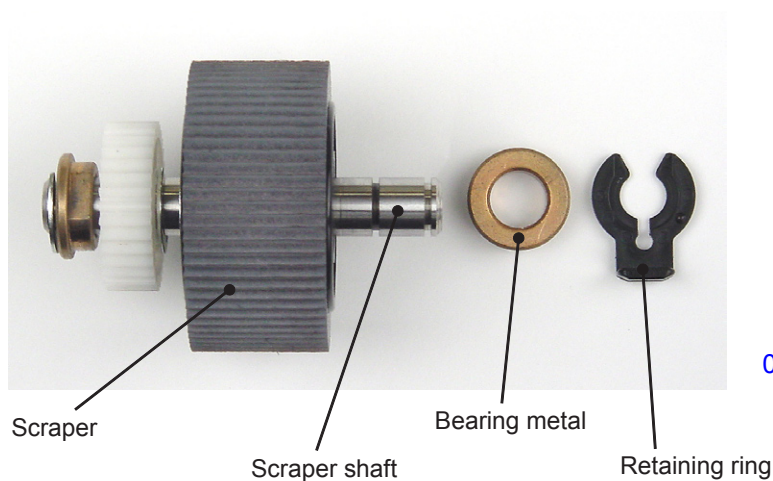
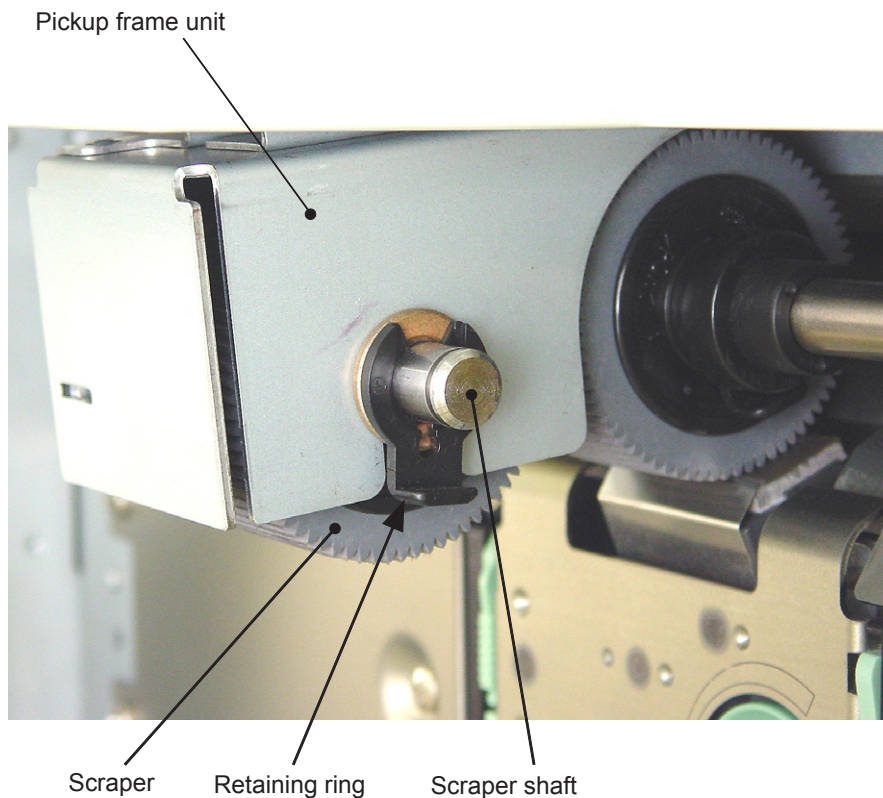
- Align the mark (projection line) on the paper guide rack with the mark (projection line) on the spur gear when installing the paper width potentiometer assembly.



3. Removing the Scraper and Pickup Roller

Removing the scraper

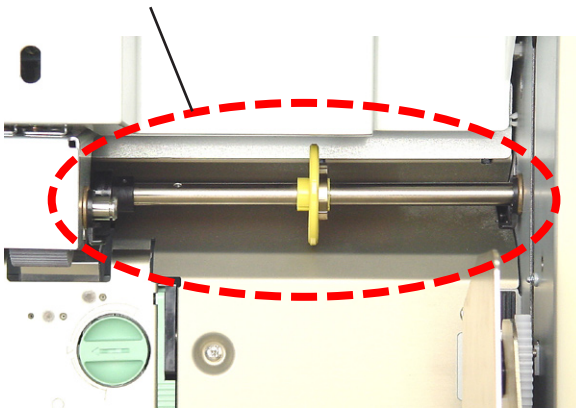
- (1) Lower the paper feed tray to the lower-limit position, then switch OFF the machine power.
 - (2) Remove the retaining ring from the scraper shaft and remove the bearing metal from the front side.
 - (3) Slide the scraper shaft toward the back, remove the bearing metal on the rear side from the pickup frame unit, and dismount the scraper together with the scraper shaft from the bottom side.
 - (4) Remove the scraper from the scraper shaft.
- * The only consumable part here is the paper feed roller. Remove it from the core assembly, then replace. The paper feed roller of the pickup roller is also a consumable part.



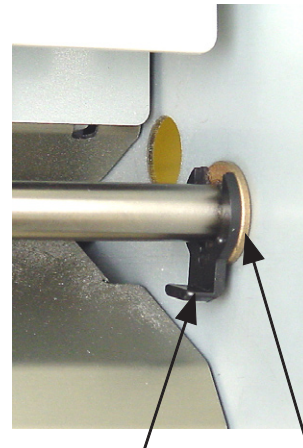
Removing the pickup roller

- (1) Lower the paper feed tray to the lower-limit position, then switch OFF the machine power.
- (2) Remove the retaining ring from the pickup extension shaft assembly, slide the shaft toward the front, and remove the bearing metal from the side plate.
- (3) Remove the retaining ring from the pickup shaft.
- (4) Remove the pickup roller from the pickup shaft.

Pickup extension shaft assembly

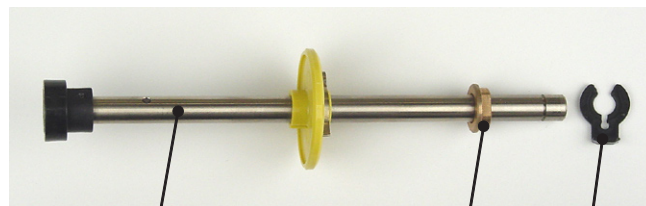


0431



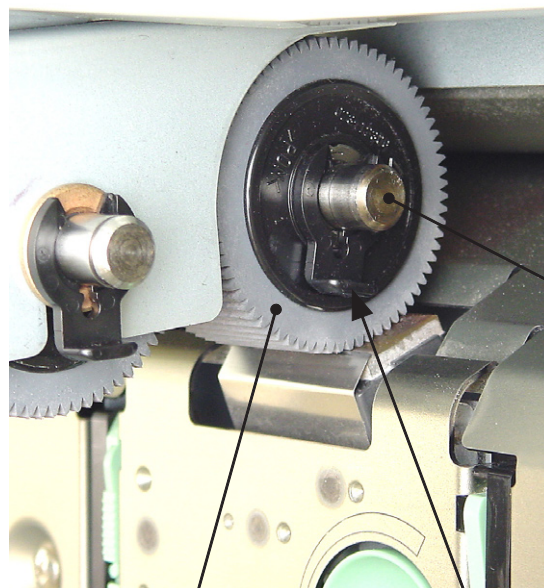
0432

Retaining ring Bearing metal



0433

Pickup extension shaft Bearing metal Retaining ring

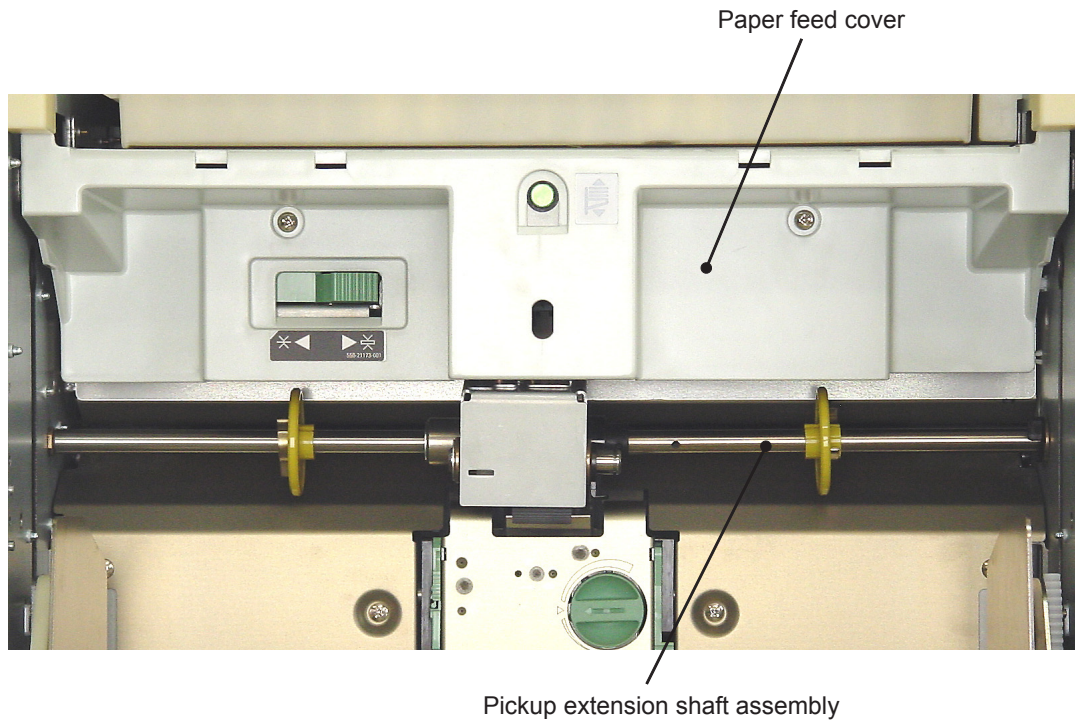


0434

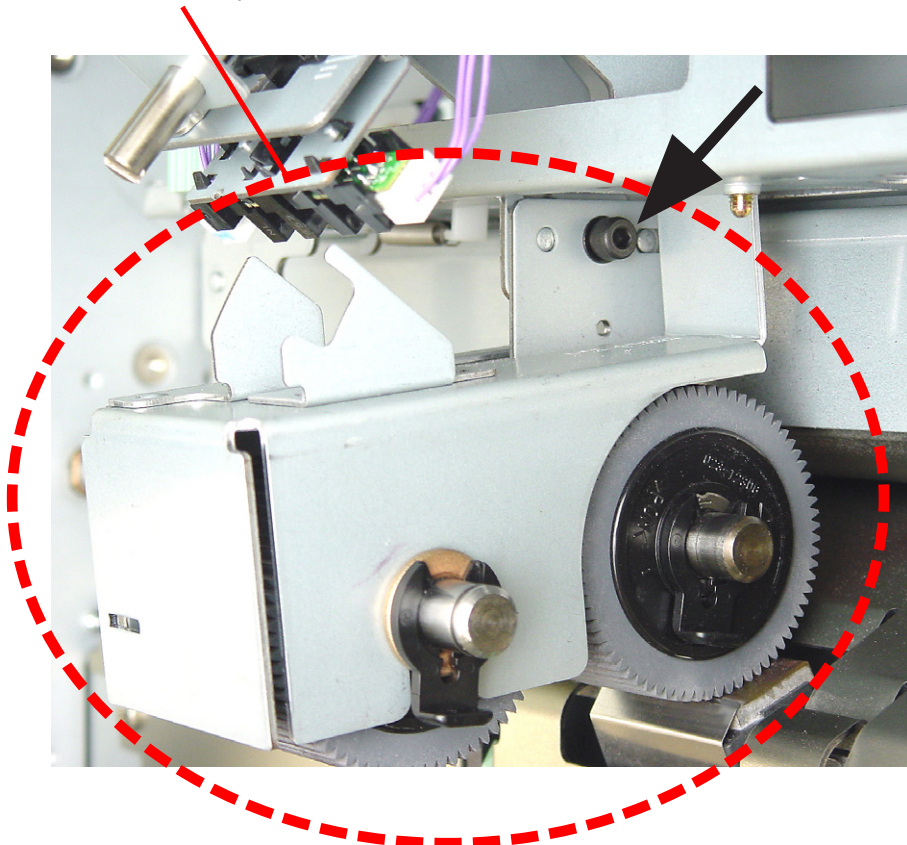
Pickup roller Retaining ring

4. Removing the Paper Feed Roller Assembly

- (1) Lower the paper feed tray to the lower-limit position, then switch OFF the machine power.
- (2) Remove the paper feed cover. (M4x8; 2 pcs)
- (3) Remove the Pickup extension shaft assembly.
- (4) Remove the mounting screw (M4x8; 1 pc) and dismount the paper feed roller assembly.

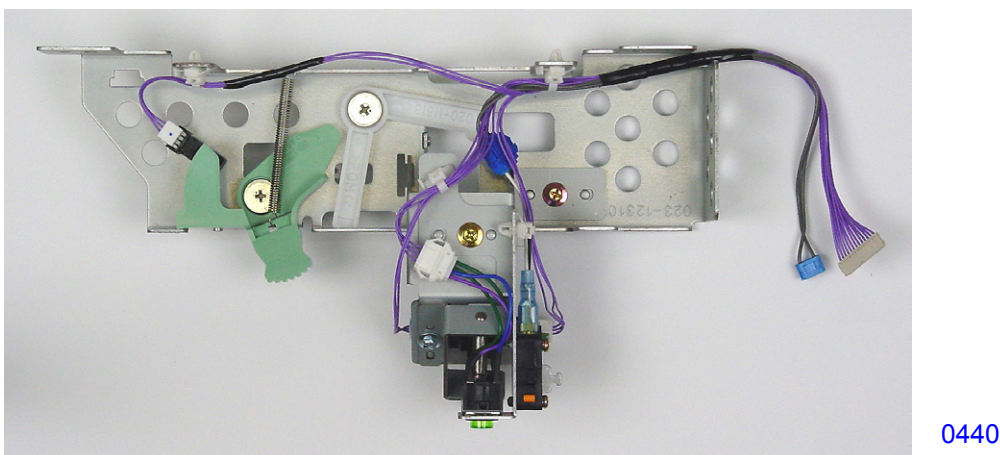
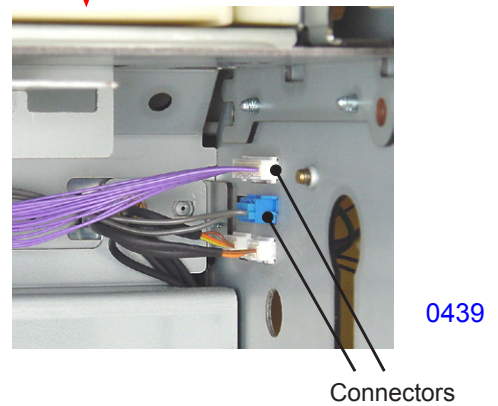
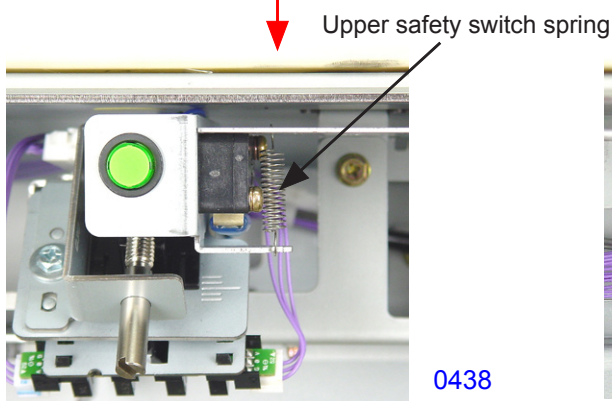
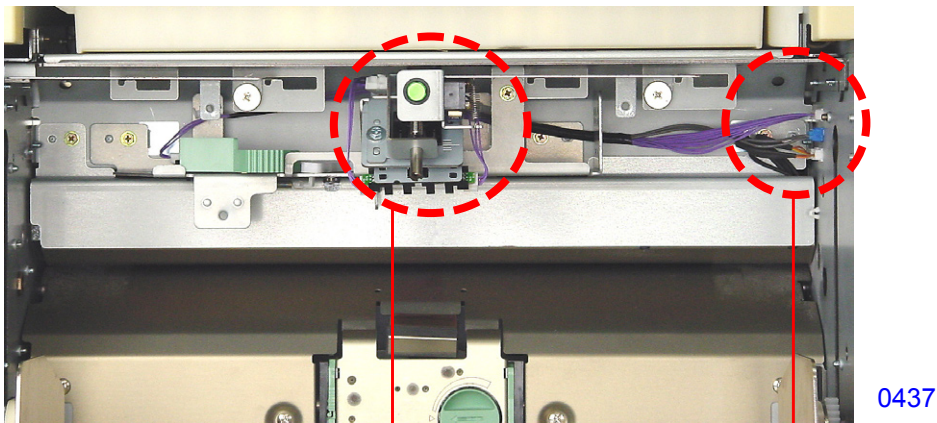


Paper feed roller assembly



5. Removing the Paper Feed Tray Button and Paper Feed Tray Upper Safety Switch

- (1) Lower the paper feed tray to the lower-limit position, then switch OFF the machine power.
- (2) Remove the following parts:
 - Paper feed cover
 - Paper feed roller assembly
- (3) Unplug the connectors (2 locations).
- (4) Remove the upper safety switch spring.
- (5) Remove the mounting screws (M3x6; 3 pcs) and dismount the first paper feed stay assembly.



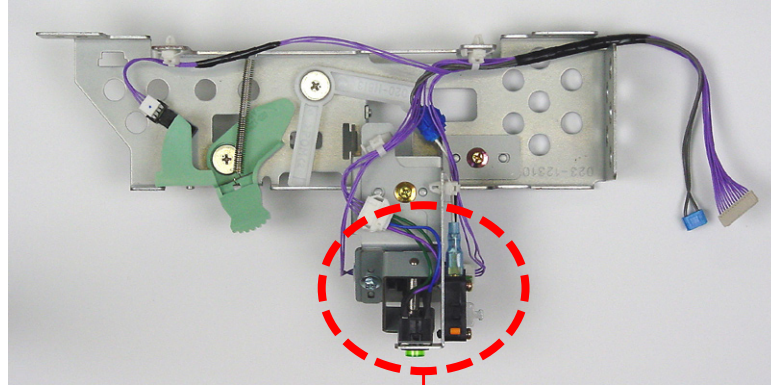
<< First paper feed stay assembly >>

Removing the paper feed tray button

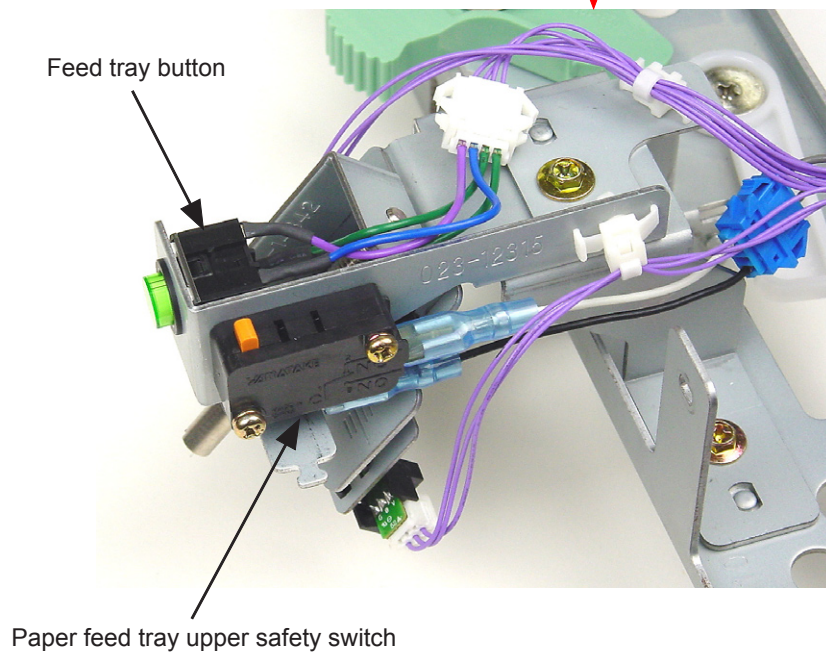
- (6) Unplug the connector, disengage the two hooks, and dismount the paper feed tray button.

Removing the paper feed tray upper safety switch

- (6) Unplug the connector, remove the mounting screws (M3x14, 2 pcs), and dismount the paper feed tray upper safety switch.



0441



0442

6. Removing the Elevator Upper-limit Sensors and Paper Feed Pressure Sensor

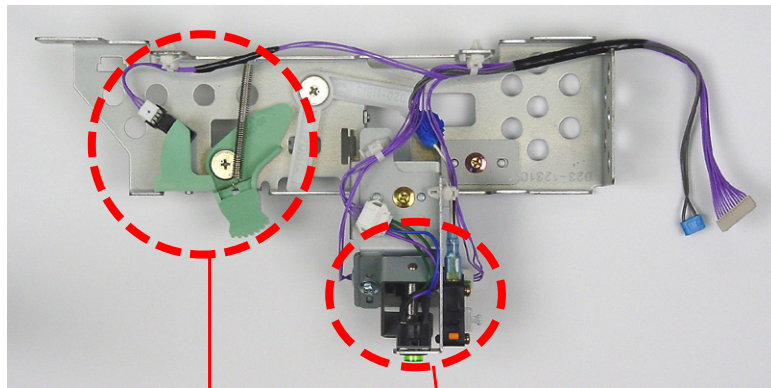
- (1) Lower the paper feed tray to the lower-limit position, then switch off power.
- (2) Remove the paper feed cover.
- (3) Remove the first paper feed stay assembly.

Removing the elevator upper-limit sensors

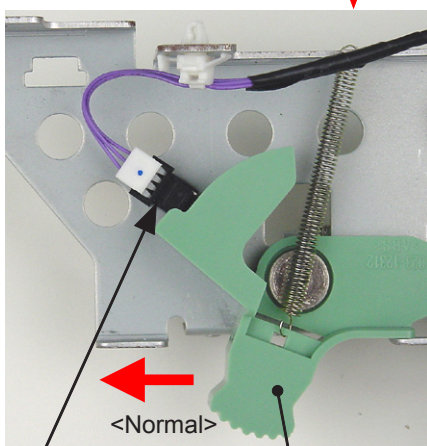
- (4) Unplug the connectors and dismount the elevator upper-limit sensors.

Removing the paper feed pressure sensor

- (4) Set the paper feed pressure lever to the <Normal> position.
- (5) Unplug the connector and dismount the paper feed pressure sensor.



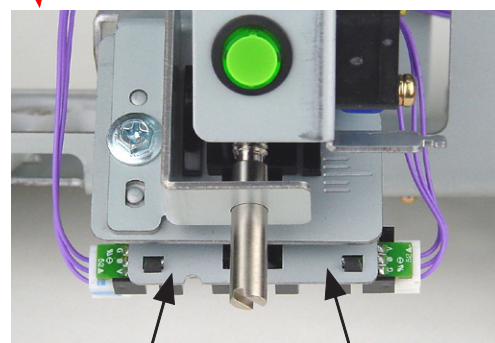
0443



0444

Paper feed pressure sensor

Paper feed pressure lever

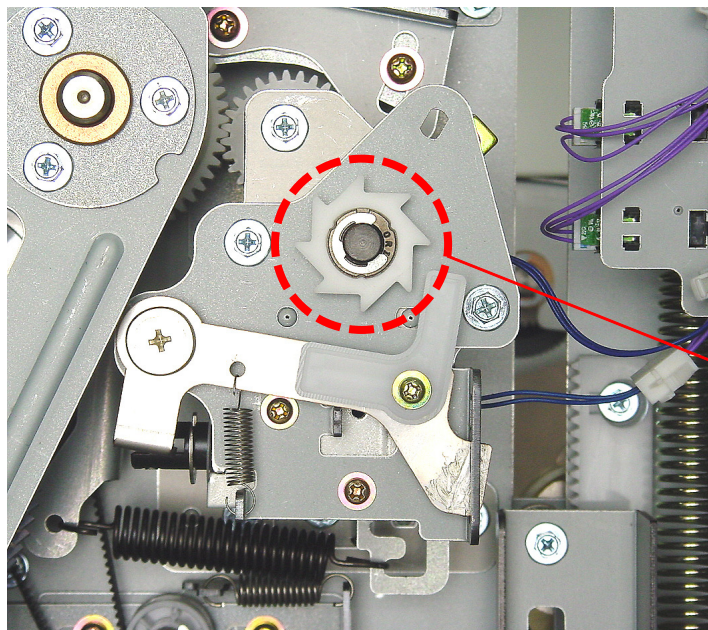


0445

Elevator upper-limit
sensor BElevator upper-limit
sensor A

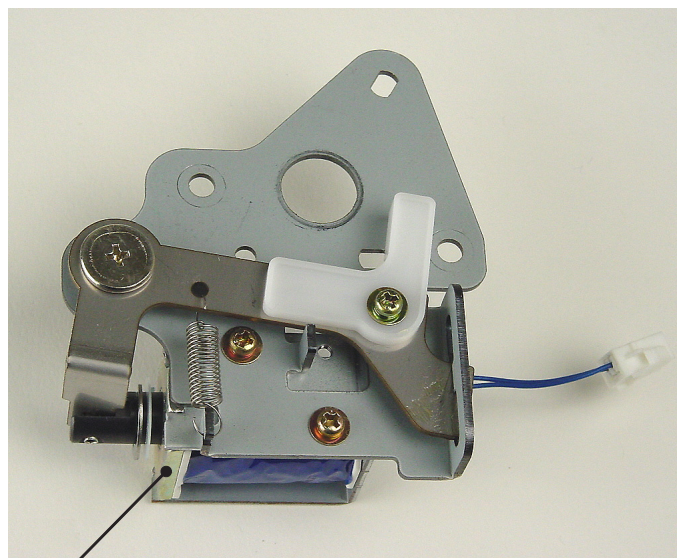
7. Removing the Paper Feed Reverse-rotation Prevention Solenoid

- (1) Switch OFF the machine power and remove the rear cover.
- (2) Open the SH PCB bracket.
- (3) Remove the E-ring and dismount the paper feed reverse-rotation prevention core assembly.
- (4) Unplug the connector, remove the mounting screws (M4x8; 2 pcs), and dismount the paper feed reverse-rotation prevention assembly.
- (5) Remove the mounting screws (M3x6; 2 pcs) and dismount the paper feed reverse-rotation prevention solenoid.



Paper feed reverse-rotation prevention core assembly

0446



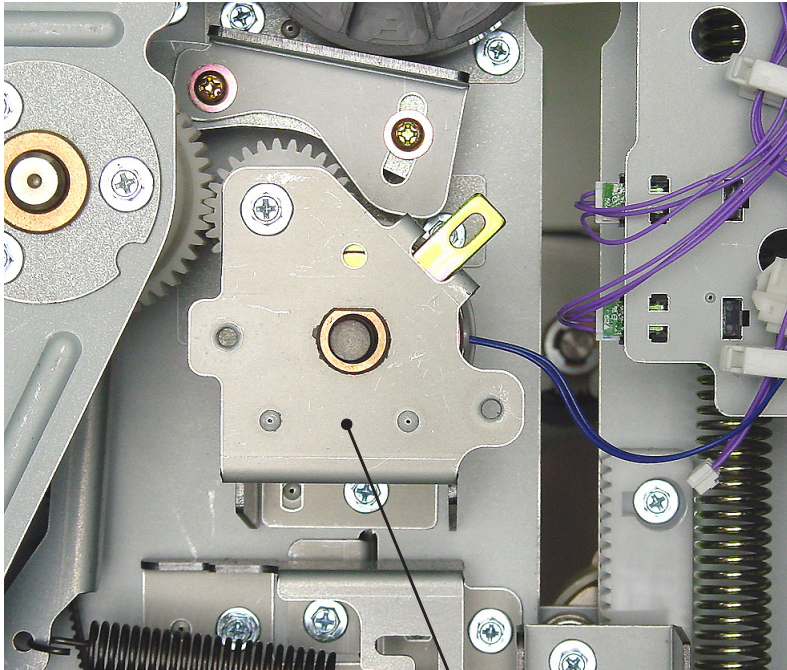
Paper feed reverse-rotation prevention solenoid

0447

<< Paper feed reverse-rotation prevention assembly >>

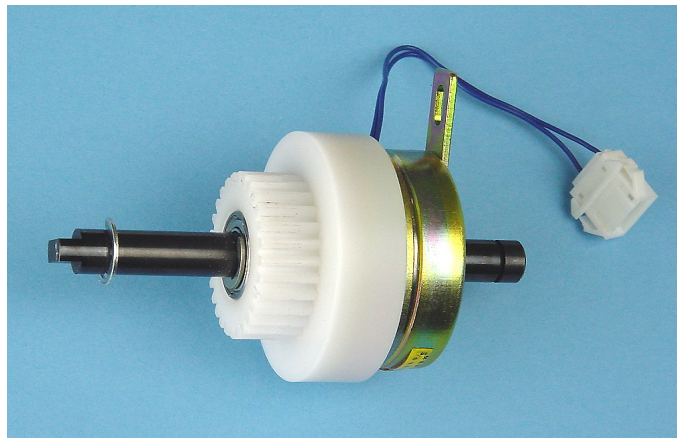
8. Removing the Paper Feed Clutch

- (1) Switch OFF the machine power and remove the rear cover.
- (2) Open the SH PCB bracket.
- (3) Remove the paper feed reverse-rotation prevention core assembly and the paper feed reverse-rotation prevention assembly.
- (4) Remove the mounting screws (M4x8; 2 pcs) and dismount the paper feed clutch bracket.
- (5) Unplug the connector and dismount the paper feed clutch.



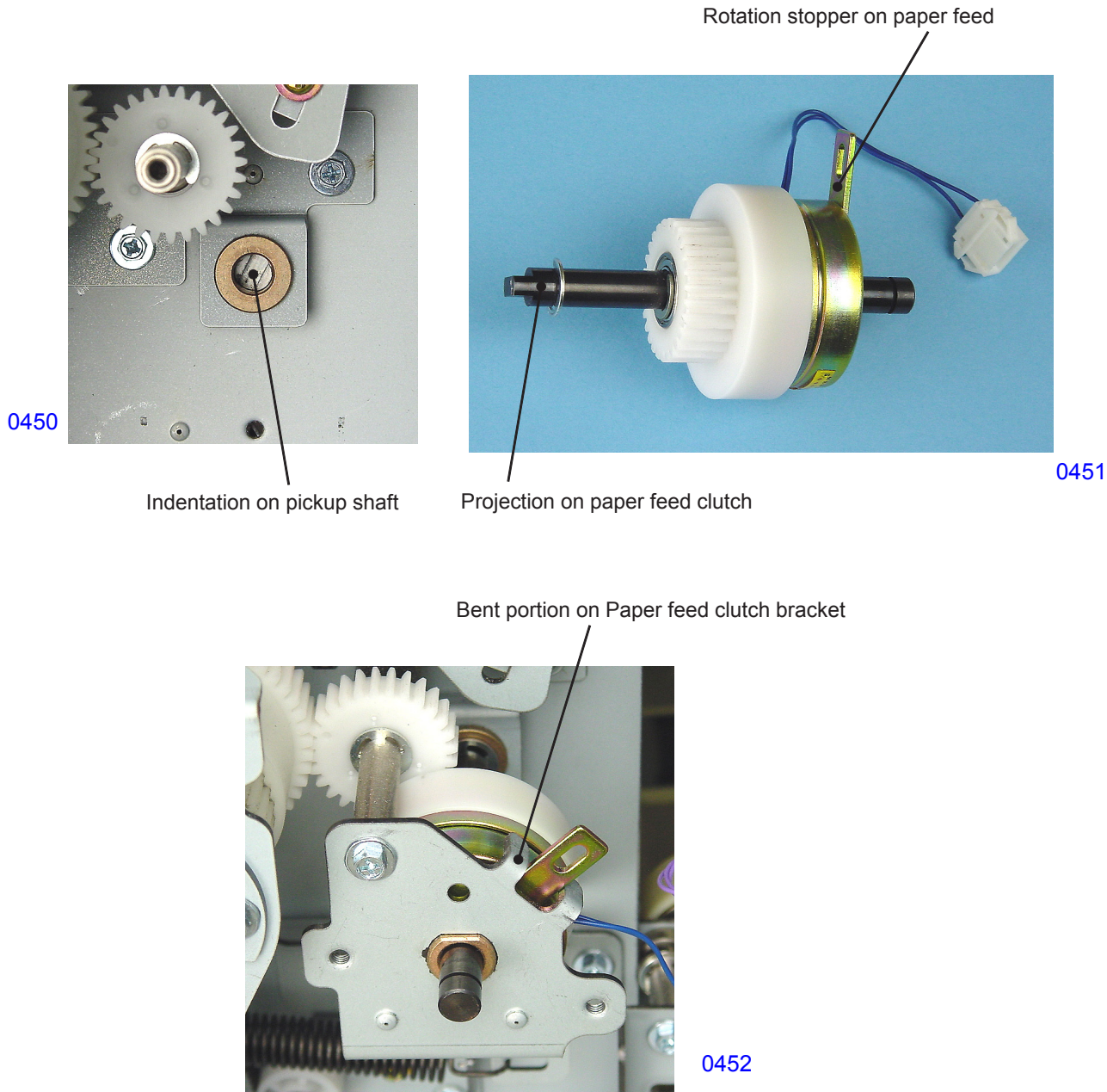
0448

Paper feed clutch bracket



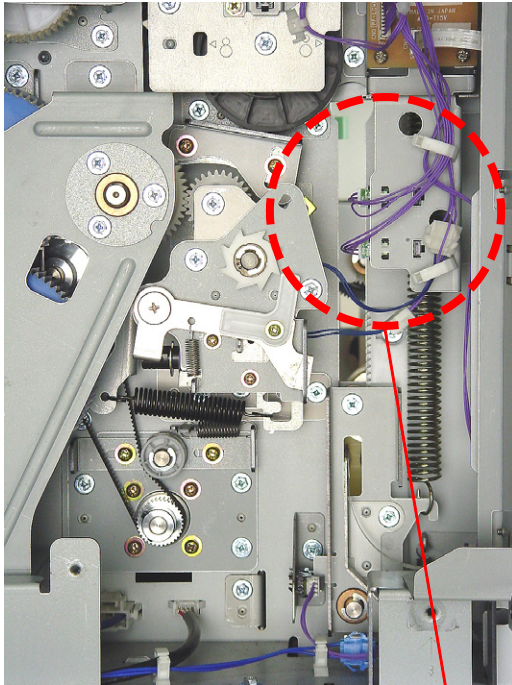
0449

<< Paper feed clutch >>

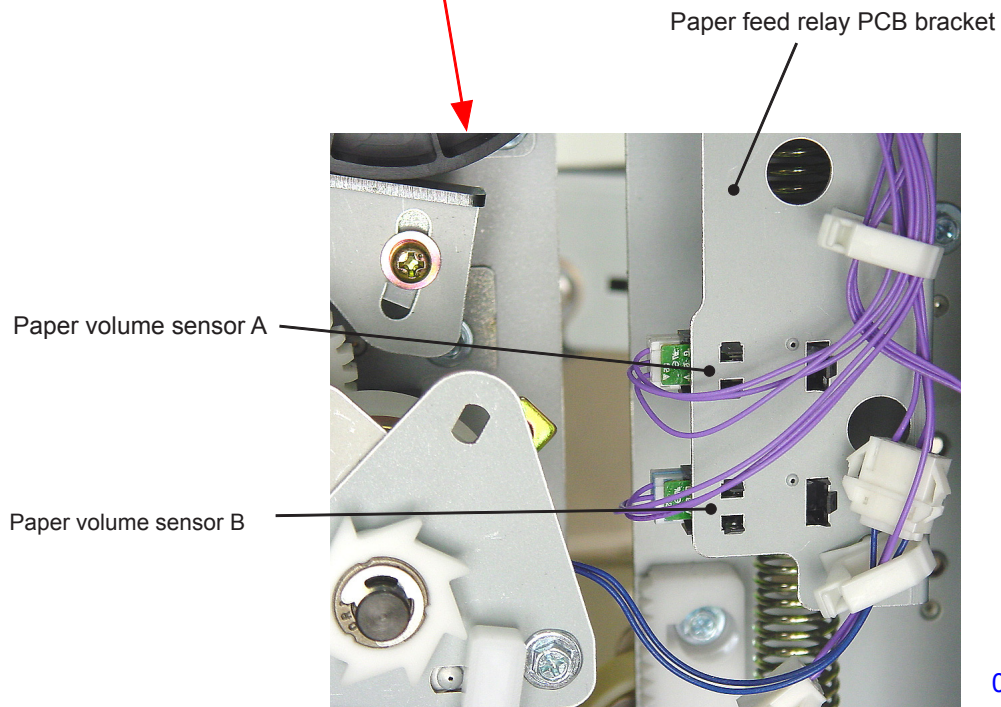


9. Removing Paper Volume Sensors A and B

- (1) Switch OFF the machine power, remove the rear cover, and open the SH PCB bracket.
- (2) Unplug the connector and dismount paper volume sensors A and B from the paper feed relay PCB bracket.



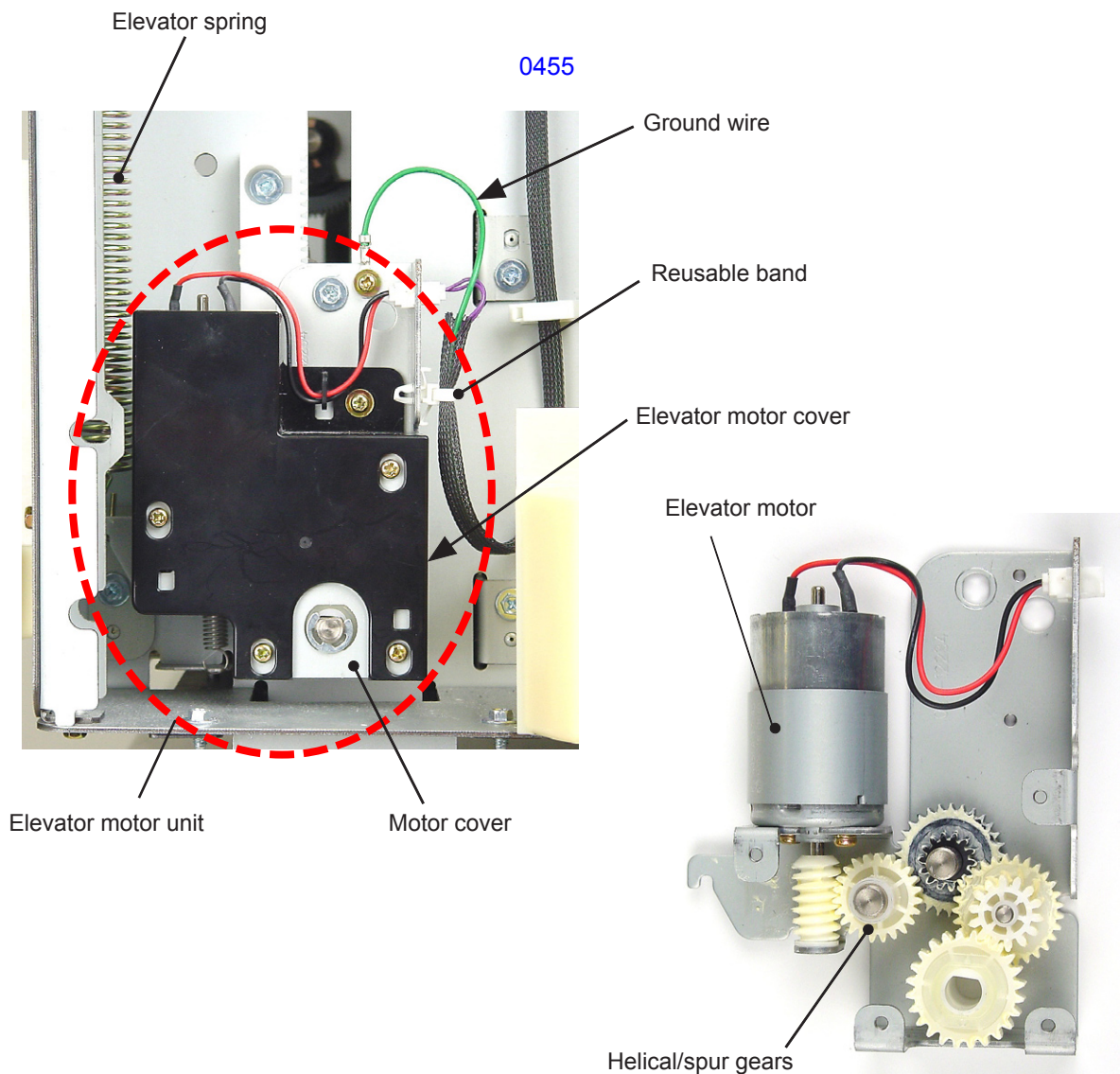
0453



0454

10. Removing the Elevator Motor

- (1) Turn OFF the machine power and remove the front cover.
- (2) Remove the left front cover. (M4x8; 5 pcs)
- (3) Remove the elevator spring on the front side.
- (4) Remove the mounting screw (M3x8; 1 pc) and disconnect the ground wire.
- (5) Unplug the connector and remove the reusable band.
- (6) Detach the E-ring, remove the mounting screw (M4x8; 1 pc), and dismount the elevator motor unit.
- * When dismounting the elevator motor unit, grasp the paper feed tray to prevent the paper feed tray from rising abruptly.
- (7) Remove the mounting screw (M3x6; 1 pc) and dismount the elevator motor cover.
- (8) Remove the mounting screws (M3x5; 4 pcs) and dismount the motor cover.
- (9) Remove the helical/spur gears.
- (10) Unplug the connector, remove the mounting screws (M3x5; 2 pcs), and dismount the elevator motor.



11. Removing the Elevator Lower-limit Sensor and Paper Feed Tray Lower Safety Switch

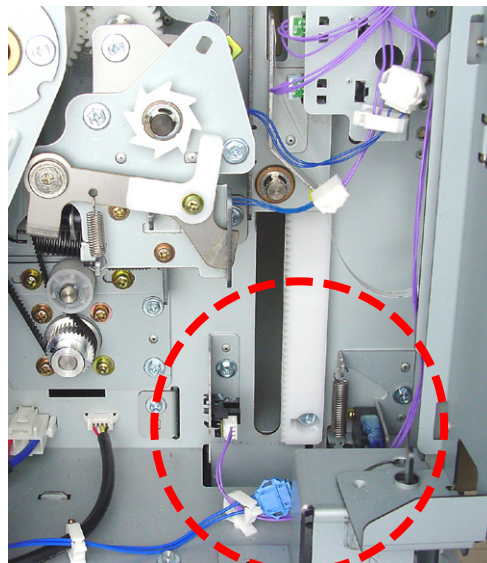
- (1) Raise the paper feed tray to the upper-limit position, then switch OFF the machine power.
- (2) Remove the rear cover and open the SH PCB bracket.

Removing the elevator lower-limit sensor

- (3) Unplug the connector and dismount the elevator lower-limit sensor.

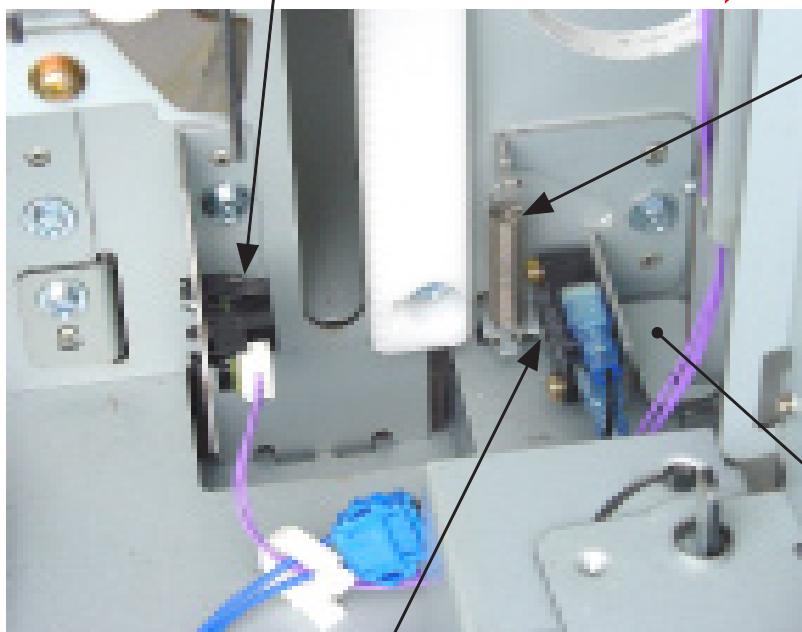
Removing the paper feed tray lower safety switch

- (3) Remove the lower safety switch spring.
- (4) Unplug the connector, remove the mounting screw (M4x8; 1 pc), and dismount the paper feed tray lower safety switch together with the bracket.



0457

Elevator lower-limit sensor



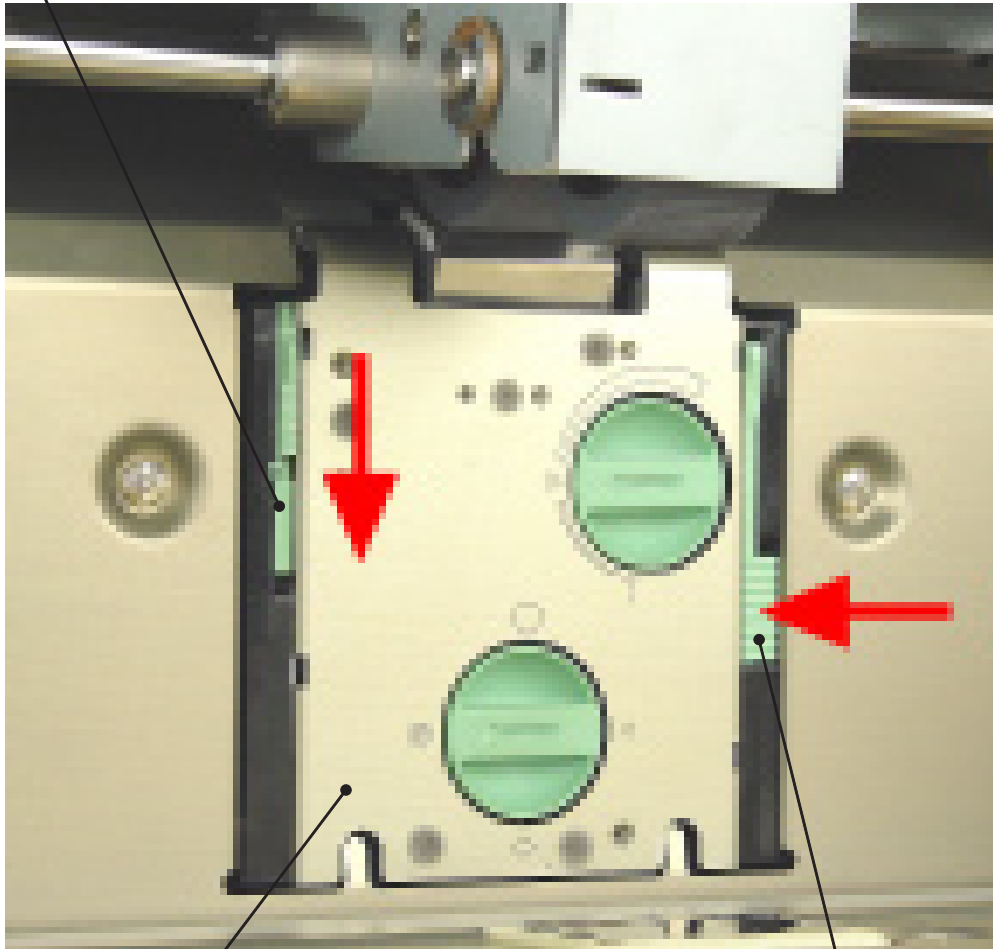
0458

Paper feed tray lower safety switch

12. Removing the Stripper Pad Unit

- (1) Lower the paper feed tray to the lower-limit position, then switch OFF the machine power.
- (2) Lower the lock knob and release the lock for the stripper pad unit.
- (3) Press the stripper pad release lever and detach the stripper pad unit.

Lock knob



0459

Stripper pad unit

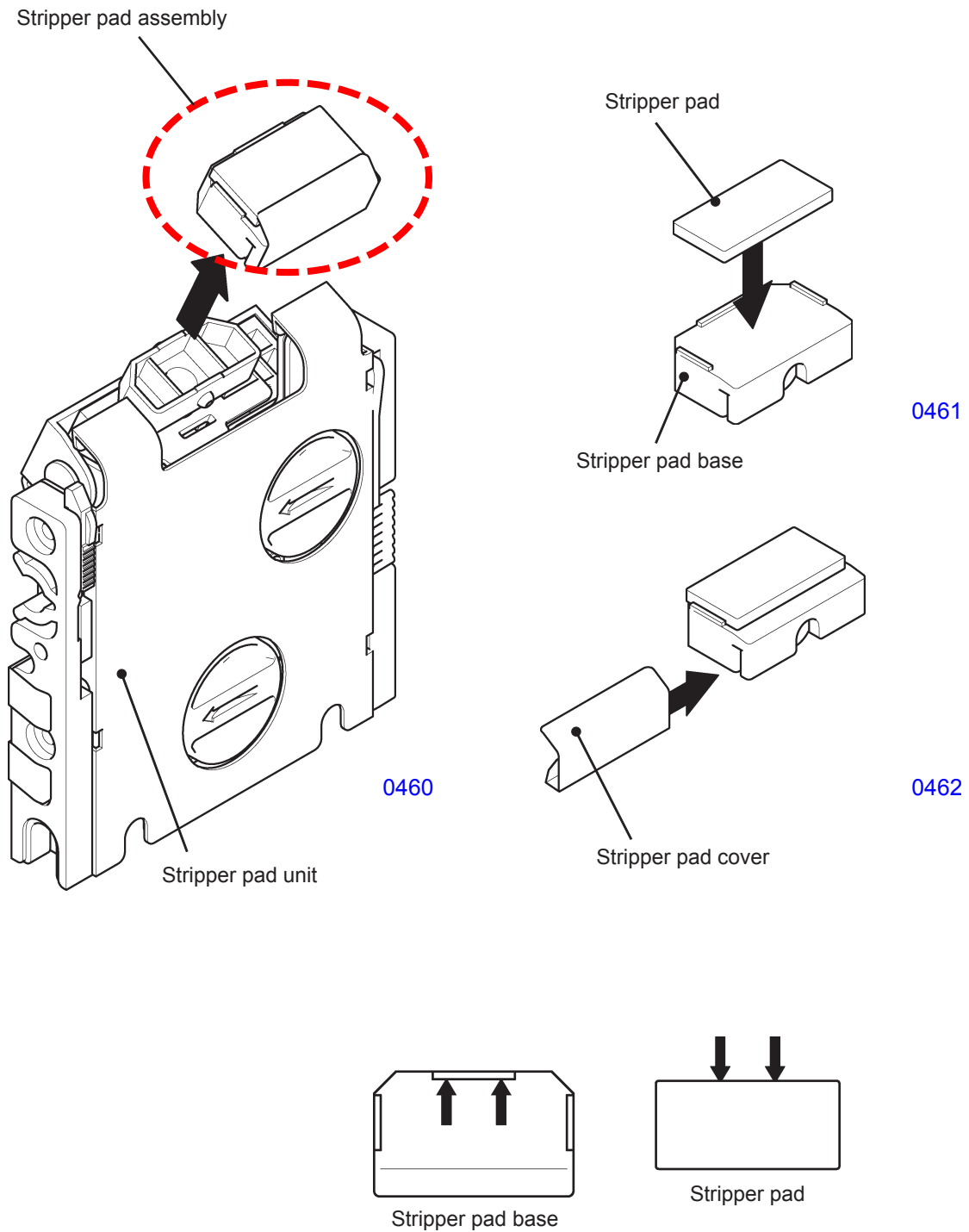
Stripper pad release lever

13. Removing the Stripper Pad Assembly

- (1) Lower the paper feed tray to the lower-limit position, switch off power, and remove the stripper pad unit.
- (2) Manually lift and remove the stripper pad assembly.

<< Precautions for installation >>

- Press the edge of the stripper pad (indicated by the arrows) against the section of the stripper pad base (indicated by the arrows) when attaching the stripper pad.



Adjustment

1. Elevator Upper-limit Sensor Position Adjustment

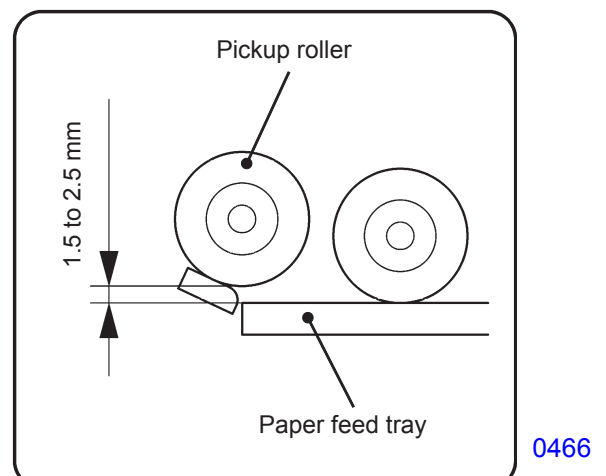
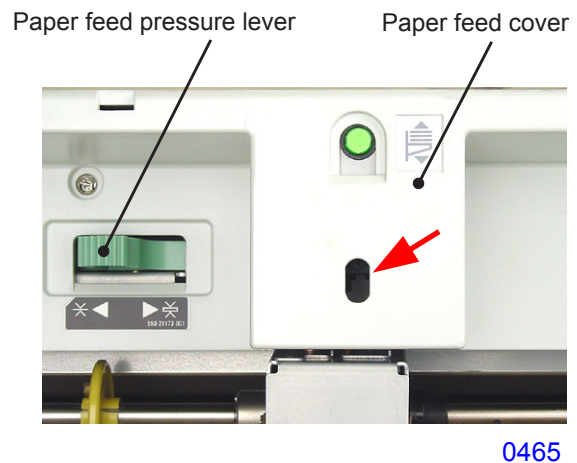
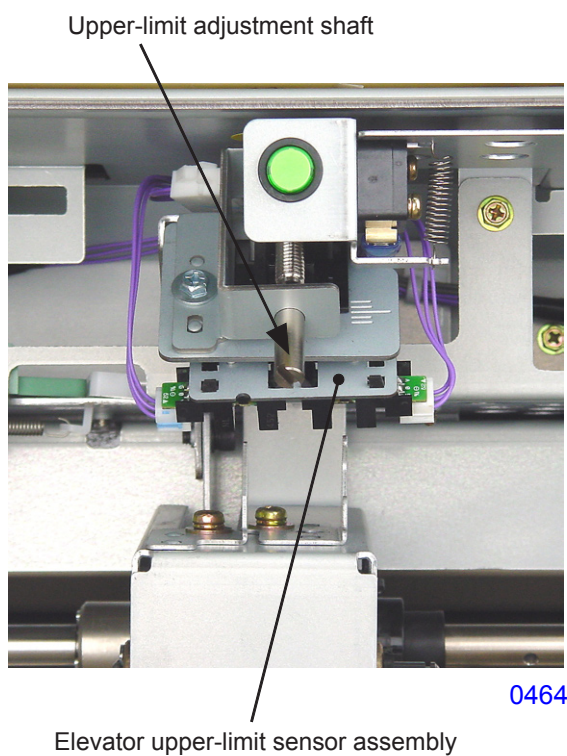
Adjustment and adjustment procedures

- (1) Remove paper from the paper feed tray and set the paper feed pressure lever to the <Normal> position.
 - (2) Run Test Mode No. 681 (Paper feed tray maximum up positioning) to lift the paper feed tray. Bring to a full stop.
 - (3) After the paper feed tray comes to a complete stop, confirm that the gap between the pickup roller and the paper feed tray ranges from 1.5 to 2.5 mm.
 - (4) If the measured value falls outside this range, adjust by inserting a flat-head screwdriver through the opening in the paper feed cover and turning the upper-limit adjustment shaft to move the elevator upper-limit sensor assembly vertically.
- * Turning the upper-limit adjustment shaft clockwise lowers the elevator upper-limit sensor assembly and increases the gap.

Possible problems when incorrectly adjusted:

Setting the elevator upper-limit sensor position too high increases paper feed pressure and may result in multiple paper feeds.

Setting the sensor position too low can reduce paper feed pressure until paper frequently fails to feed at all.



2. Stripper Pad Adjustment

Adjustment procedure

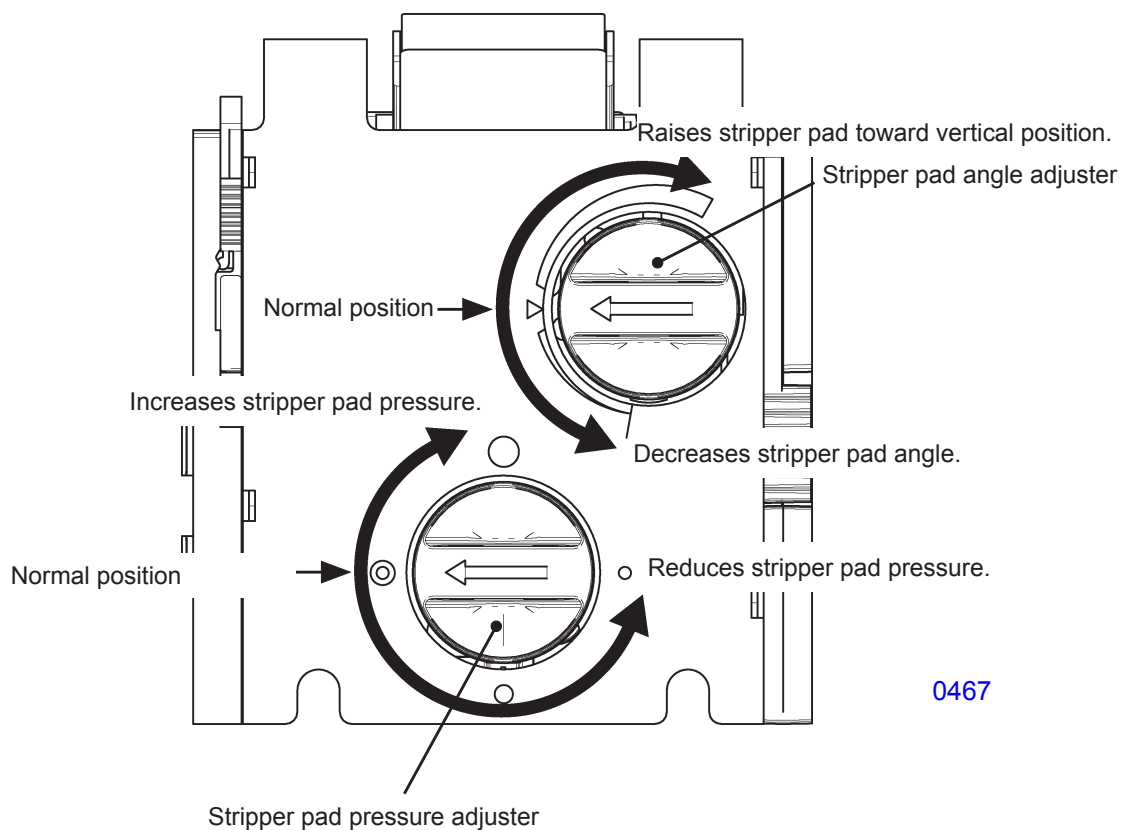
- (1) Switch the paper feed pressure lever position to suit the paper type and begin printing.
- (2) If a multiple paper feed or paper feed failure occurs, adjust the stripper pad angle or stripper pad pressure.

1) When multiple paper feeds occur:

- Turn the stripper pad angle adjuster clockwise to increase the stripper pad angle (toward vertical).
- Turn the stripper pad pressure adjuster clockwise to increase stripper pad pressure.

2) When paper feed failures occur:

- Turn the stripper pad angle adjuster counterclockwise to decrease the stripper pad angle (toward horizontal).
- Turn the stripper pad pressure adjuster counterclockwise to reduce stripper pad pressure.



3. Paper Feed Clutch ON Angle Adjustment

Checks and adjustment procedures

- (1) Print and confirm that the paper feeds reliably and smoothly.
- (2) If the timing is off for the first paper feed, launch test mode for the paper feed clutch ON angle adjustment and adjust, based on the paper type selection setting entered by the user. (For setting procedures and related information, refer to the section on test modes.)
- (3) Repeat the steps from (1).

Possible problem when incorrectly adjusted:

If first paper feed timing is off, paper jams or print position deviations may occur.

4. Paper Feed Clutch OFF Angle Adjustment

Checks and adjustment procedures

- (1) Print and confirm that printing occurs smoothly.
- (2) If the paper slack is excessive or inadequate and results in unsatisfactory printing results, launch test mode for the paper feed clutch OFF angle adjustment and make adjustments based on the paper type selection setting entered by the user. (For setting procedures and related information, refer to the section on test modes.)
- (3) Repeat the steps from (1).

Possible problem when incorrectly adjusted:

If the paper slack is excessive or inadequate, paper will not transfer to the second paper feed section, resulting in paper jams.

5. Paper Width Potentiometer Adjustment

Checks and adjustment procedures

- (1) Start up Test Mode and enter No.9874 to access into the protected area test mode.
 - (1) Set the paper guide width to 105 mm and run Test Mode No. 1102 (Paper size VR adjustment).
 - (2) Set the paper guide width to 297 mm and run Test Mode No. 1103 (Paper size VR adjustment).
 - (3) Set the paper guide width to 105 mm, run Test Mode No. 721 (Paper width potentiometer data), and confirm that the display indicates a value between 1020 and 1080 (1050 ± 30).
 - (4) While running Test Mode 721 (Paper width potentiometer data), set the paper guide width to 297 mm and confirm that the display indicates a value between 2940 and 3000 (2970 ± 30).
- * When setting the paper guide width, slide the paper guides from the outer position toward the center.

Possible problem when incorrectly adjusted:

The size of the paper in the paper feed tray is not correctly identified, resulting in reduced or increased print areas. An excessive print area can result in ink contamination of the rollers.

CHAPTER 5: SECOND PAPER FEED SECTION

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Mechanism

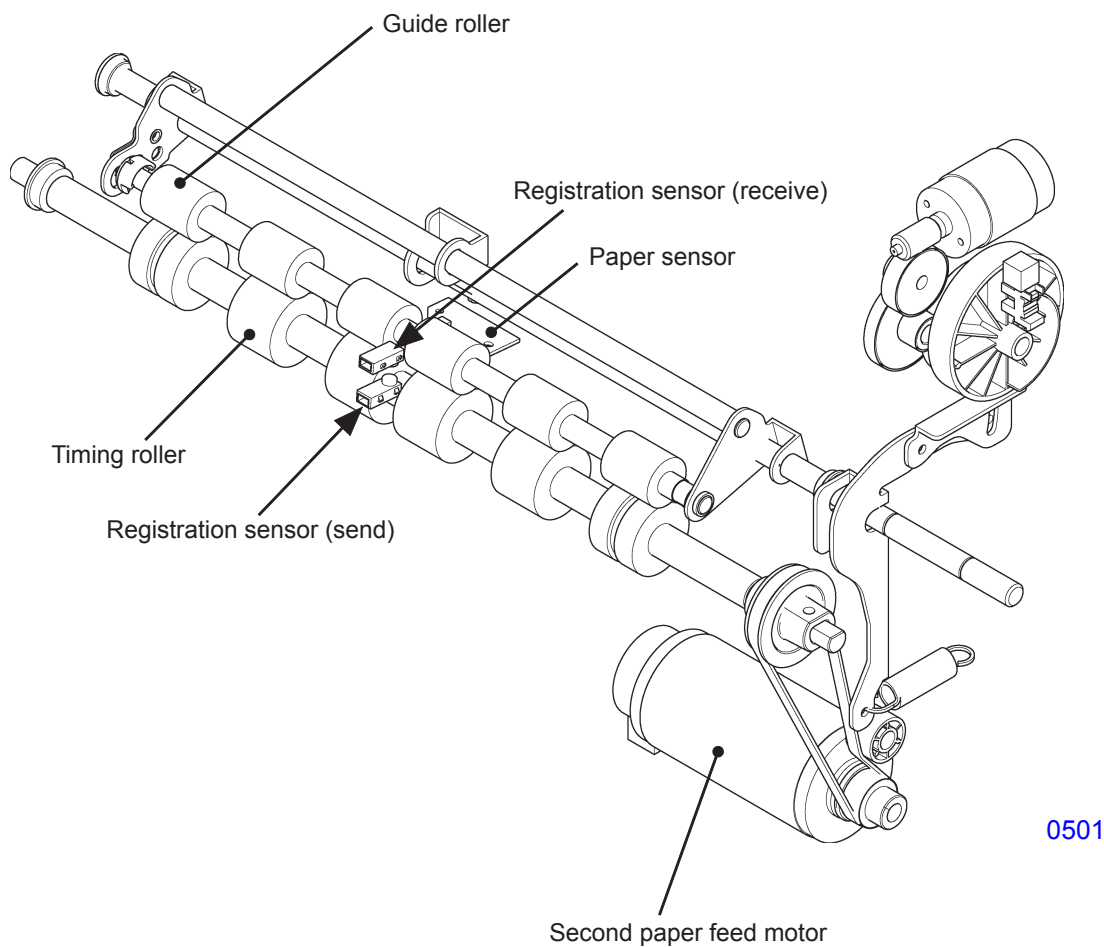
1. Second Paper Feed Mechanism

During printing, at the end of the first paper feed operation, the second paper feed motor switches ON at the preset timing, rotating the timing roller and feeding the paper to the print drum.

The registration sensor is located between the timing roller and the print drum. The registration sensor detects the leading edge of the paper sheet and controls the second paper feed motor to ensure constant timing of the arrival of the paper leading edge at the print drum.

The second paper feed motor rotates at the same speed as the print drum circumferential speed. When the paper sensor switches OFF, the motor stops after rotating for a distance of 26.5 mm.

The paper sensor also checks the proper transfer of paper.

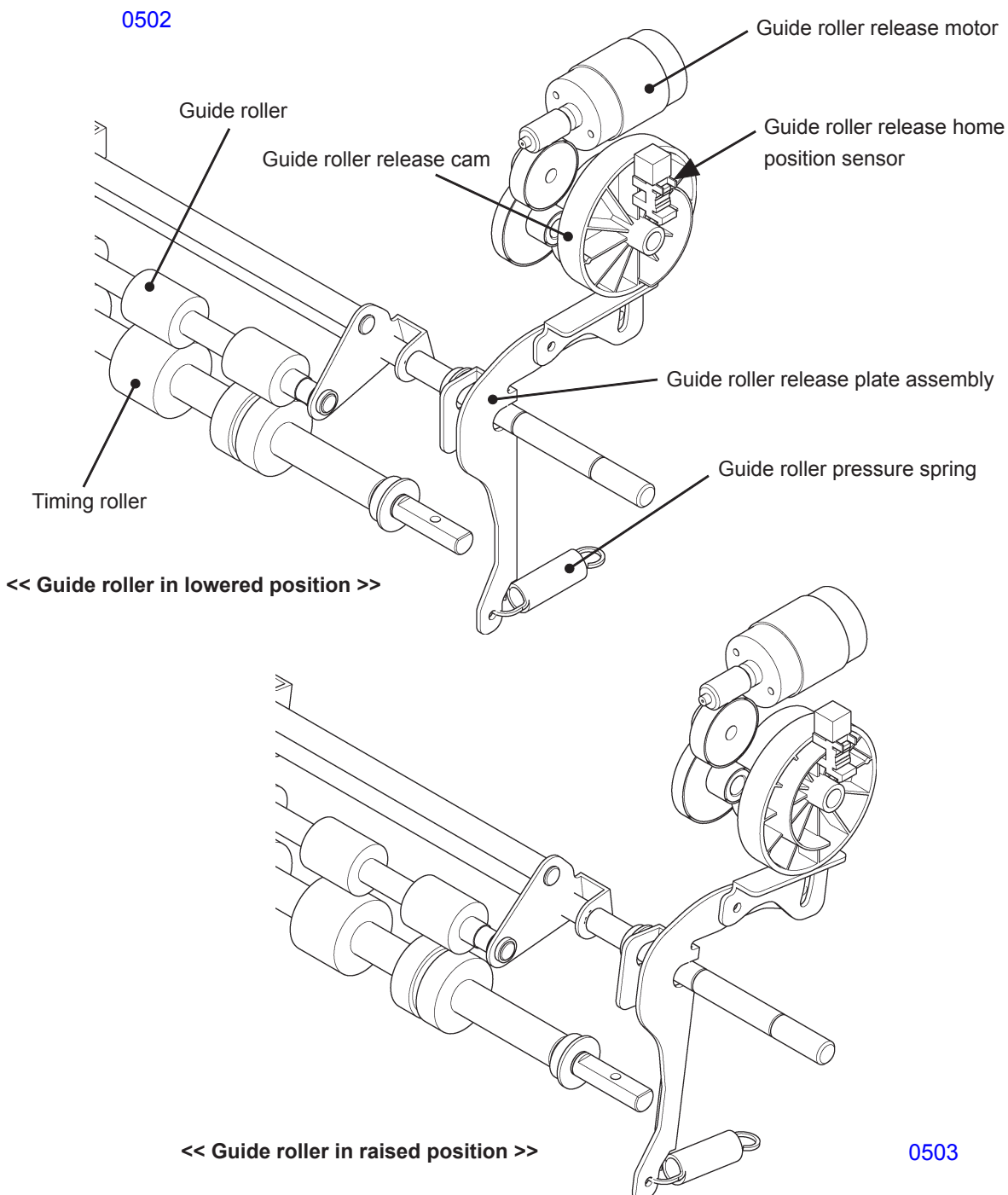


2. Guide Roller Vertical Operation Mechanism

At the start of a print job, the guide roller release motor switches ON, rotating the guide roller release cam to the nipping position. When the guide roller release cam rotates, the guide roller release plate assembly at the release position is turned counterclockwise by the force of the guide roller pressure spring, pressing the guide roller integrated with the guide roller release plate assembly against the timing roller.

During printing, the guide roller is constantly pressed against the timing roller by the guide roller pressure spring. Thus, the guide roller rotates together with the timing roller.

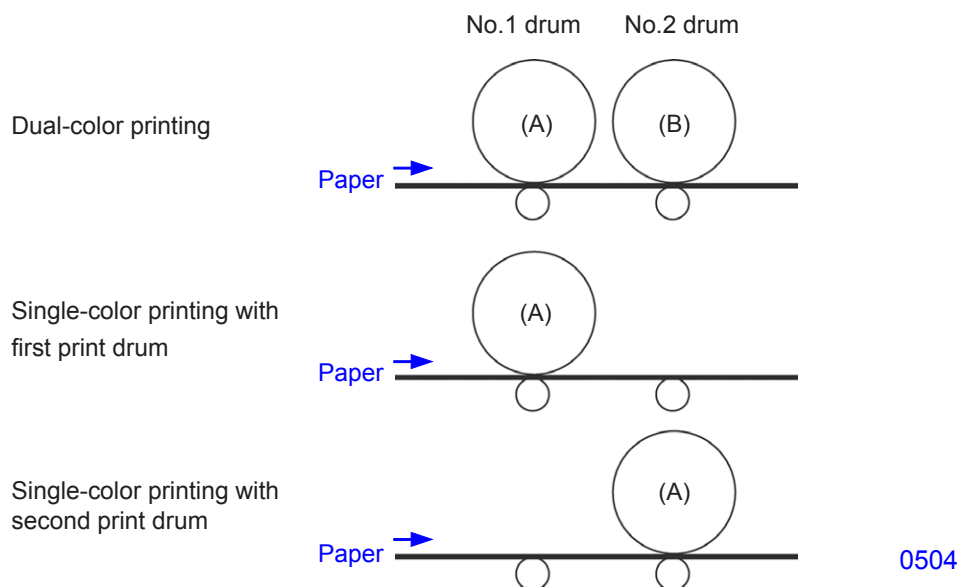
When the printing operation stops, the guide roller release motor switches ON, rotating the guide roller release cam to the release position. The guide roller release cam causes the guide roller release plate assembly to rotate clockwise, moving the guide roller away from the timing roller.



3. Vertical Print Position Control Mechanism

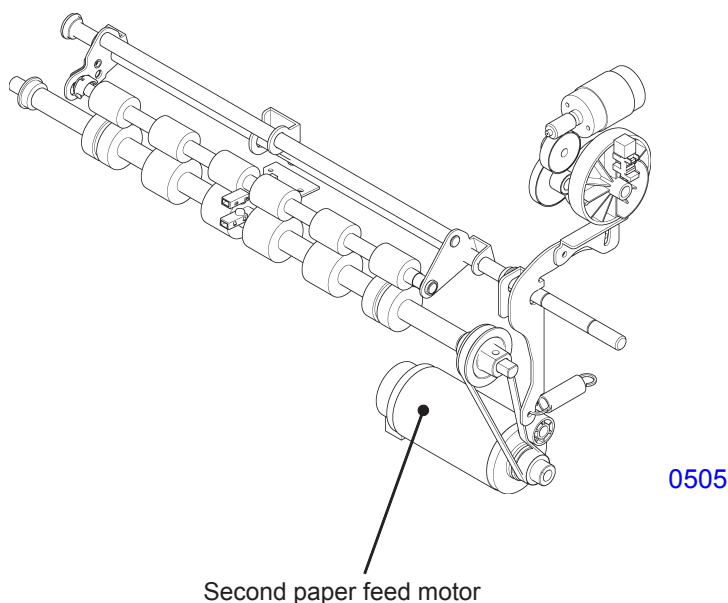
The second paper feed motor ON timing is used to adjust the vertical position of the first print drum in single-color printing (with the first print drum) or in dual-color printing. The second paper feed motor ON timing is also used to adjust the vertical position of the second print drum for single-color printing using just the second print drum, when no first print drum is installed in the main unit.

Pressing the < ← > key or < → > key for vertical print position adjustment changes the second feed motor ON timing, altering the timing of paper fed to the print drum and thereby changing the vertical print position.



The vertical print position for print drum (A) is controlled by the second paper feed motor ON timing.

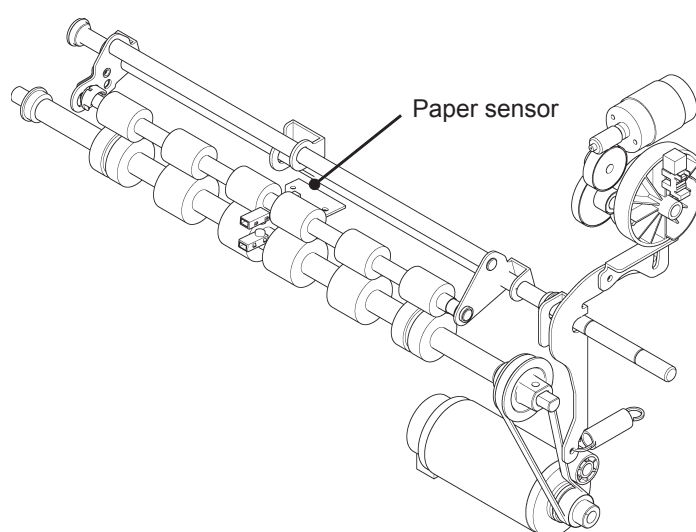
The vertical print position for print drum (B) depends on changes in phase relative to the first print drum.



4. Multiple Paper Feed Detection Mechanism

Multiple paper feeds are detected by the paper sensor, which checks the intensity of light transmitted through the paper to identify multiple paper feeds.

For each sheet of paper coming in, the paper sensor checks for the multiple feeds when the print drum rotates 2.5 degrees after the sensor detects the leading edge of the paper. The sensor light intensity is checked for a set number of times in set intervals for each paper and averages out the scanned value. This average value is then compared against the value taken from the first sheet of paper printed. If the value differs by 20% or more, a multiple paper feed is identified.

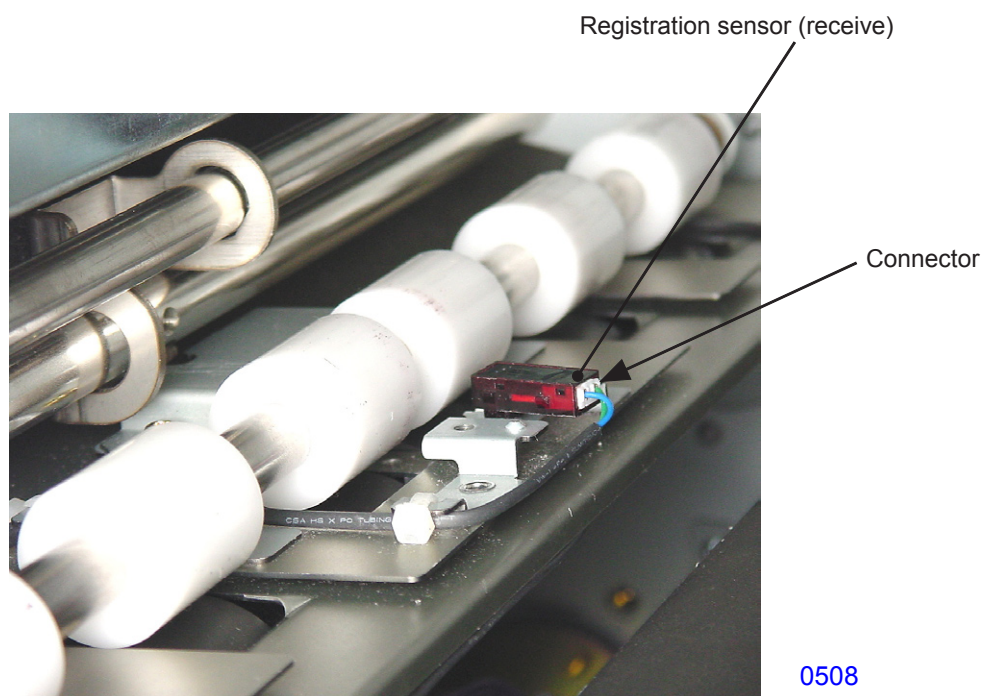
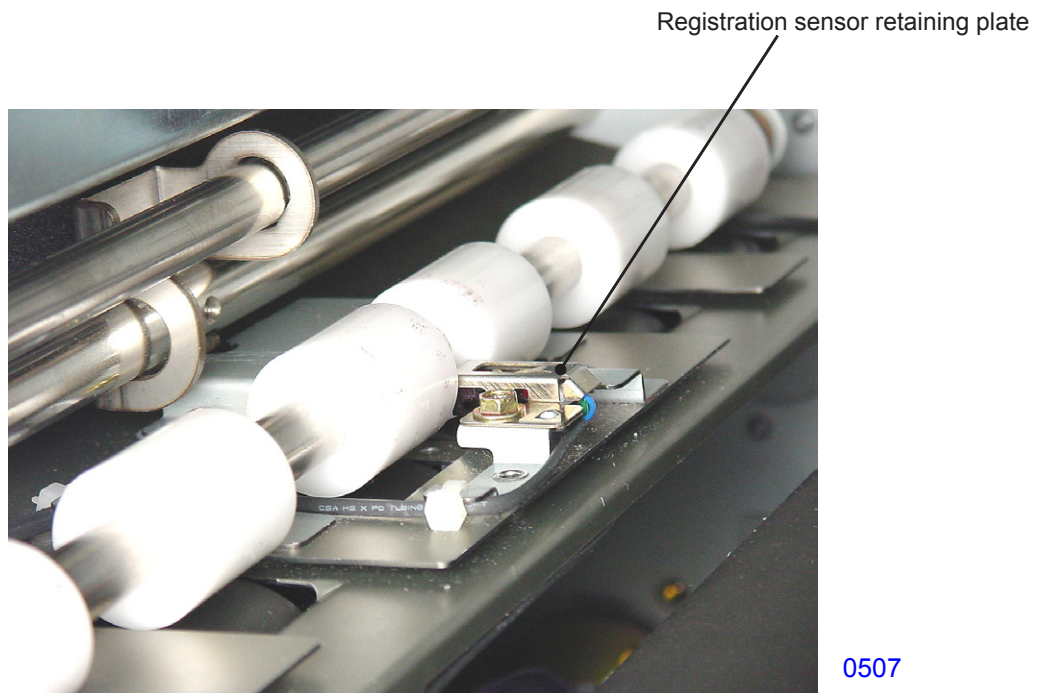


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Disassembly

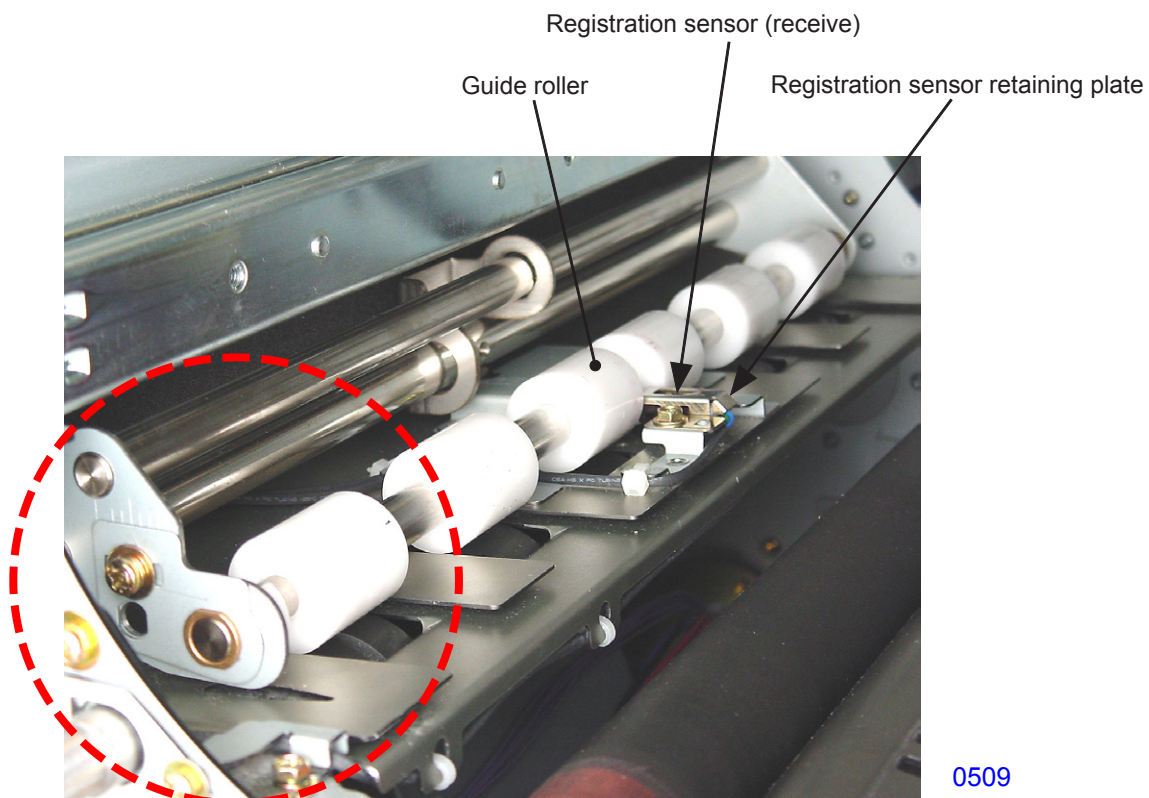
1. Removing the Registration Sensor (Receive)

- (1) Remove the first print drum, then switch off power.
- (2) Remove the mounting screw (M3 x 6; 1 pc), then remove the registration sensor retaining plate.
- (3) Unplug the connector and dismount the registration sensor (receive).

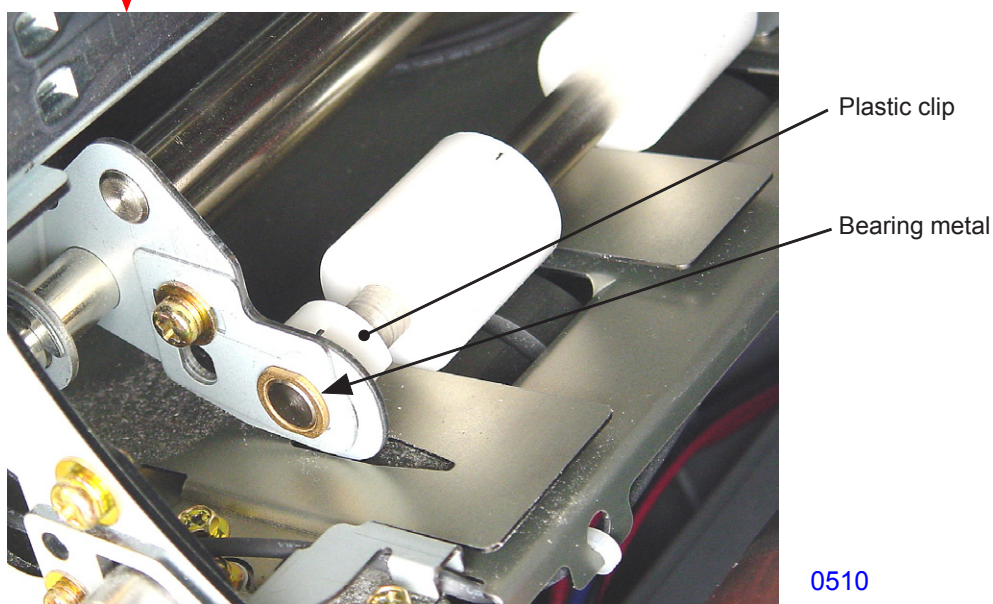


2. Removing the Guide Roller

- (1) Remove the first print drum and switch off power.
- (2) Remove the registration sensor retaining plate and move the registration sensor (receive) out of the way.
- (3) Remove the plastic clip and bearing metal on the front side, then remove the guide roller.



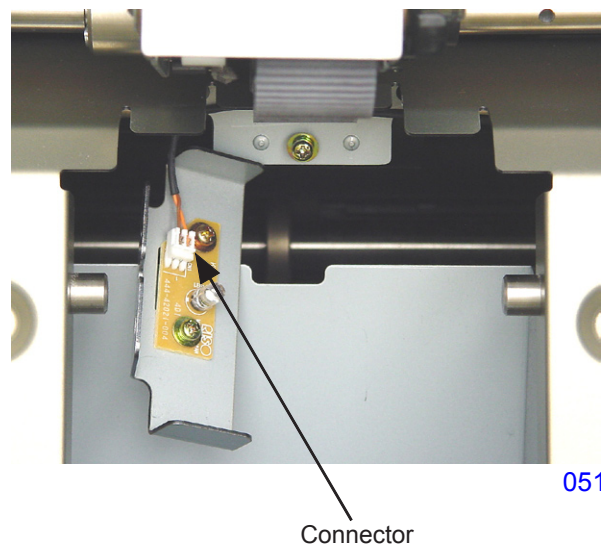
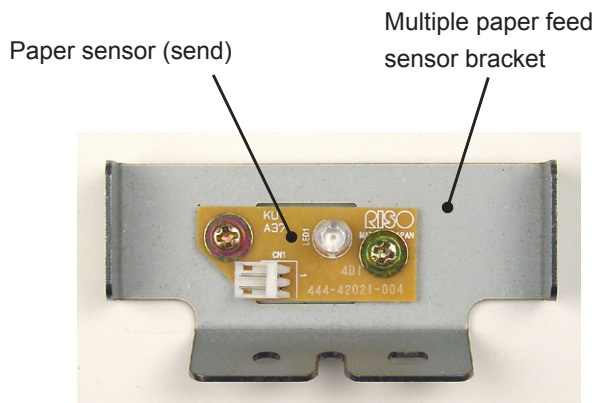
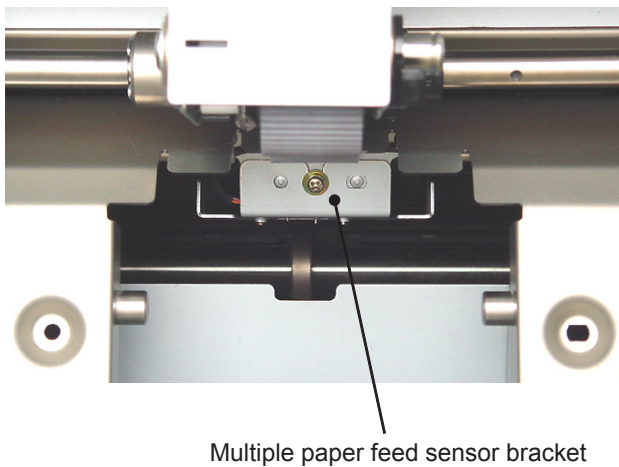
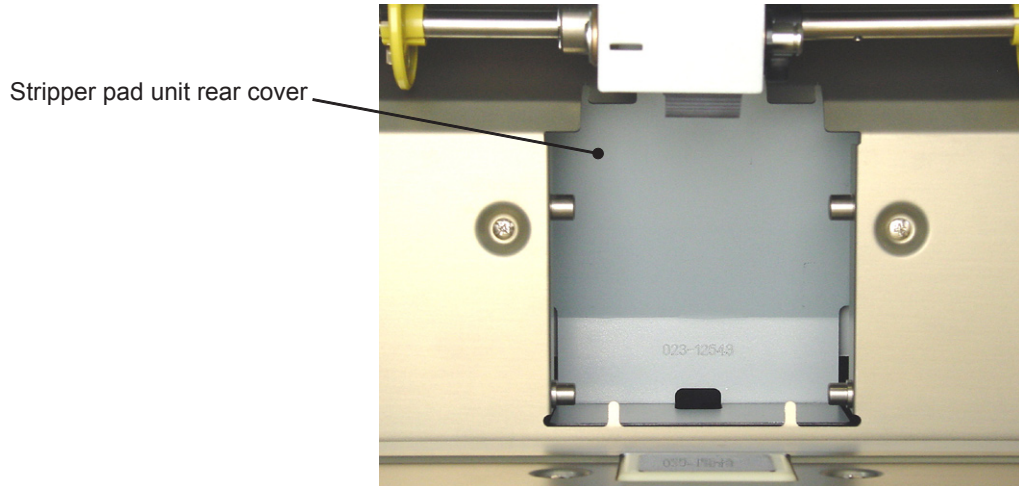
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3. Removing the Paper Sensor (Send)

- (1) Lower the paper feed tray and switch off power.
- (2) Remove the stripper pad unit.
- (3) Remove the mounting screws (M4 x 8; 2 pcs), then remove the stripper pad unit rear cover.
- (4) Loosen the screws, unplug the connector, and dismount the paper sensor (send) together with the multiple paper feed sensor bracket.



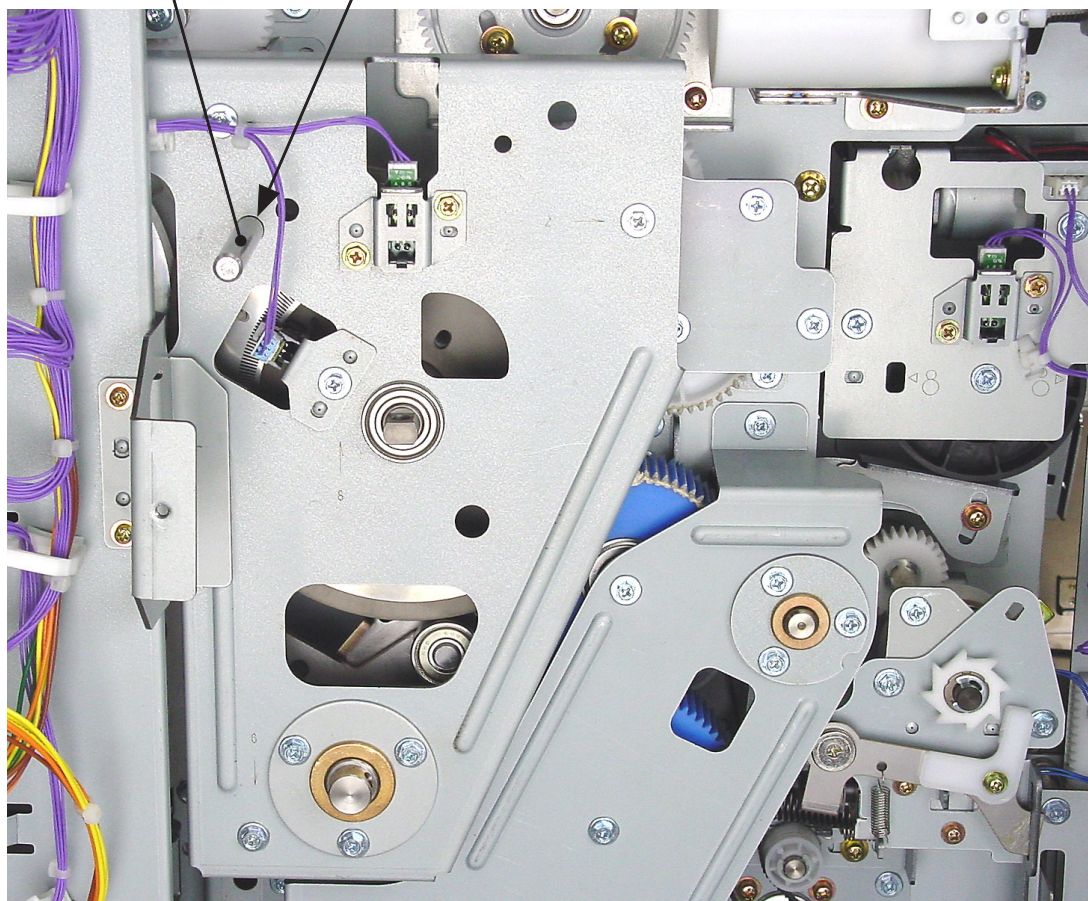
4. Removing the Timing Roller

- (1) Remove the first print drum and switch off power.
- (2) Remove the left and right rear covers and open the PCB bracket.
- (3) Dismount the paper sensor (send).
- (4) Insert the 8-mm-diameter jig shaft into the phase alignment holes on the main cover, pressure cam, and rear plate on the first print drum side.

<< Important note for safe removal >>

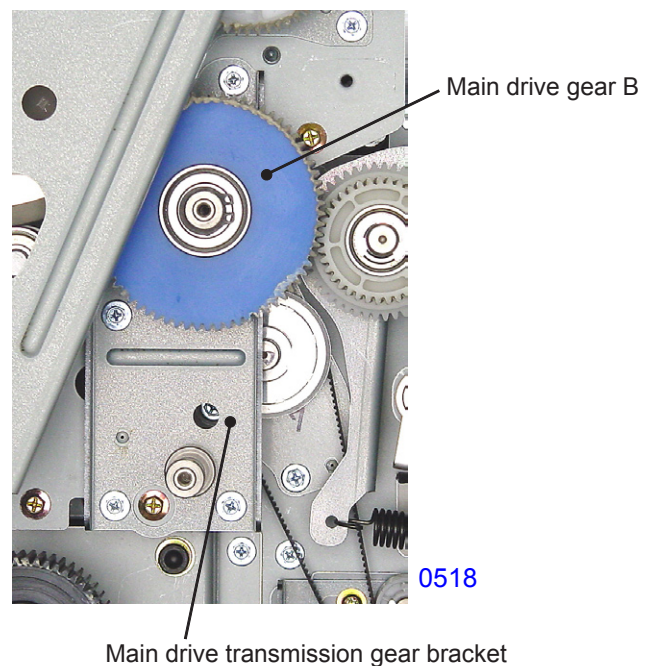
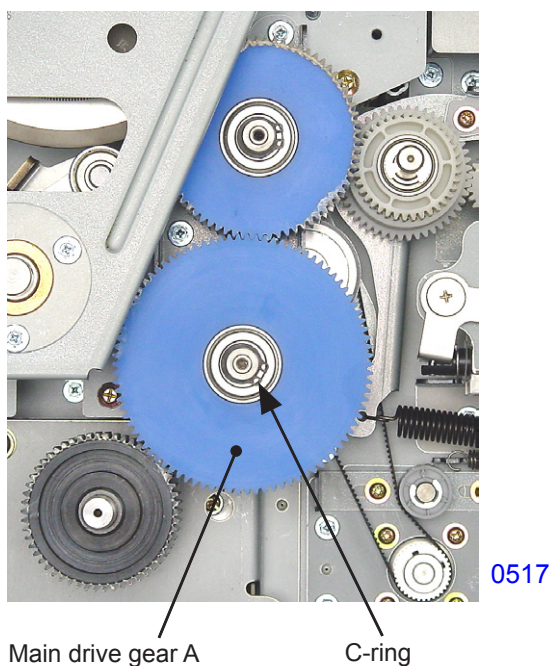
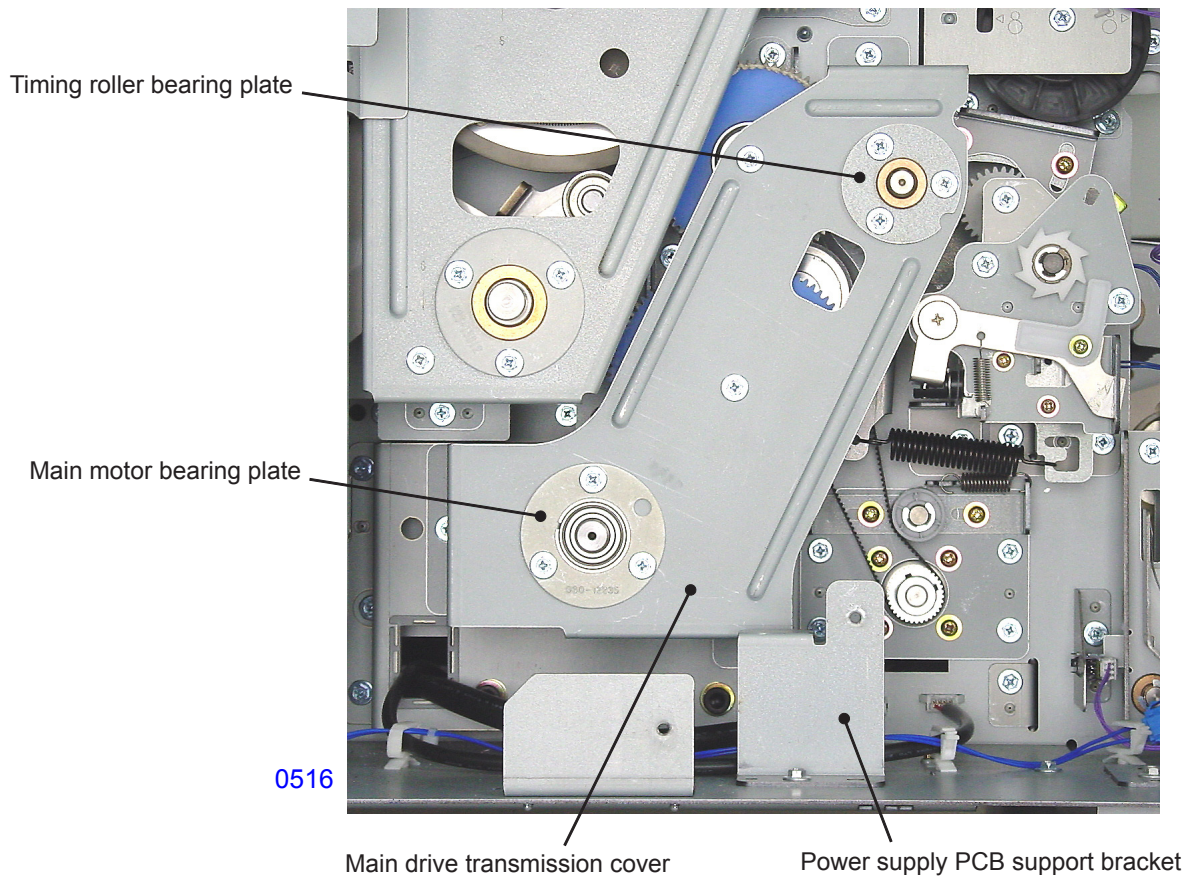
When removing main drive gears A and B, above step (4) must be performed to lock the machine movement to prevent injuries from the sudden rotation of the gears.

8-mm-diameter jig shaft Phase alignment hole

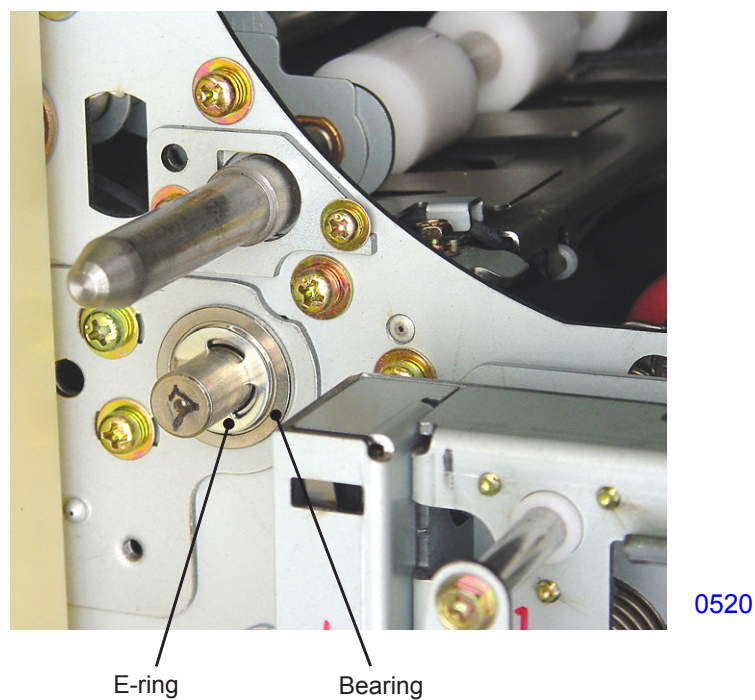
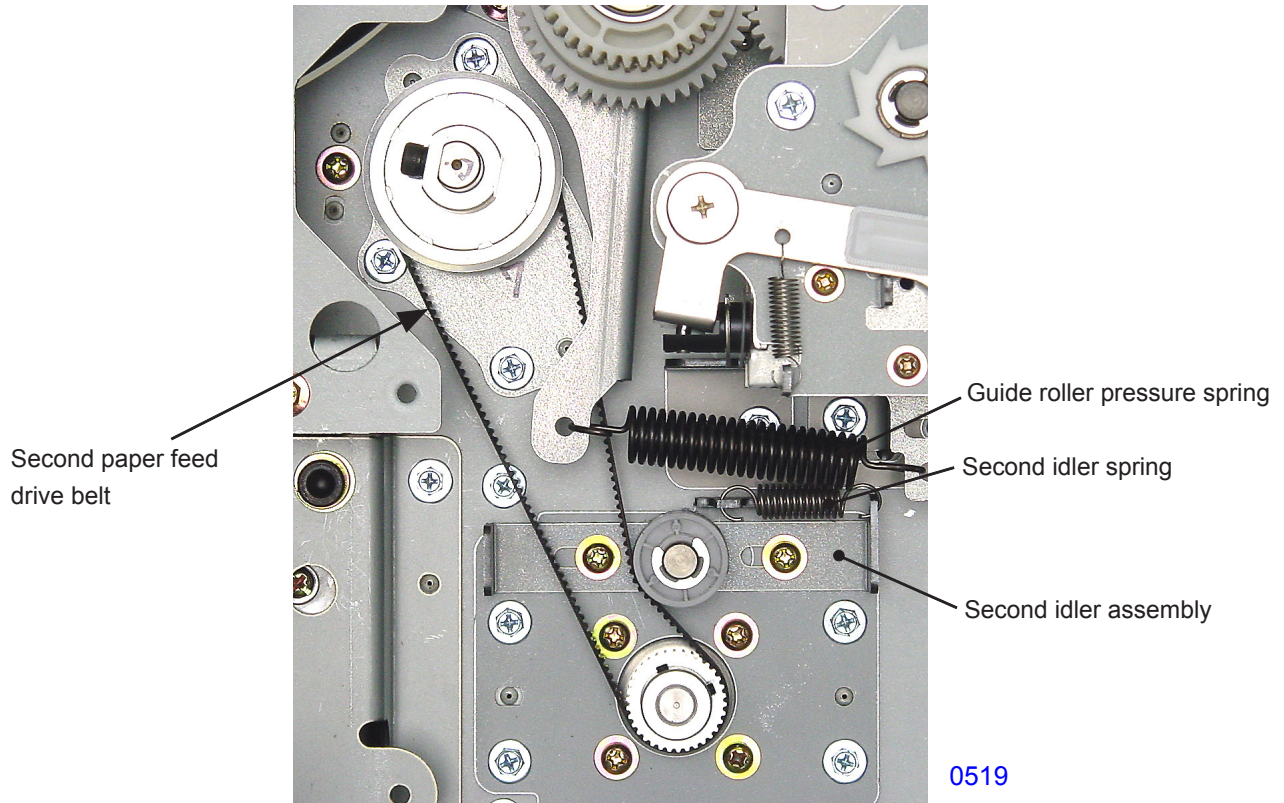


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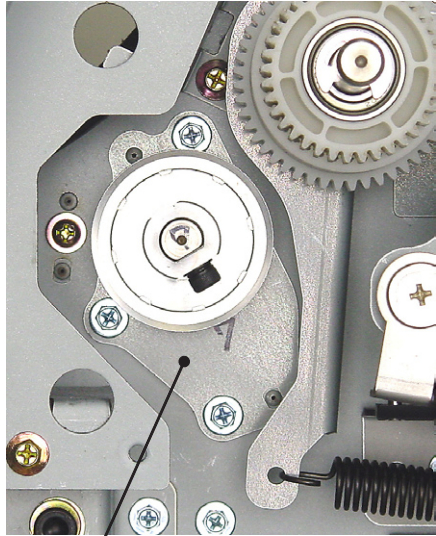
- (5) Remove the main motor bearing plate. (M4x8 screws; 3 pcs)
- (6) Remove the timing roller bearing plate. (M4x8 screws; 3 pcs)
- (7) Remove the power supply PCB support bracket. (M4x8 screw; 1 pc)
- (8) Remove the main drive transmission cover. (M4x8 screws; 5 pcs)
- (9) Remove the C-ring and dismount main drive gear A.
- (10) Remove the main drive transmission gear bracket with main drive gear B attached. (M4x8 screws; 4 pcs).



- (11) Remove the second idler spring, loosen the two mounting screws, slide the second idler assembly, then loosen the tension of the second paper feed drive belt and remove the second paper feed drive belt.
- (12) Remove the E-ring and bearing on the front side.

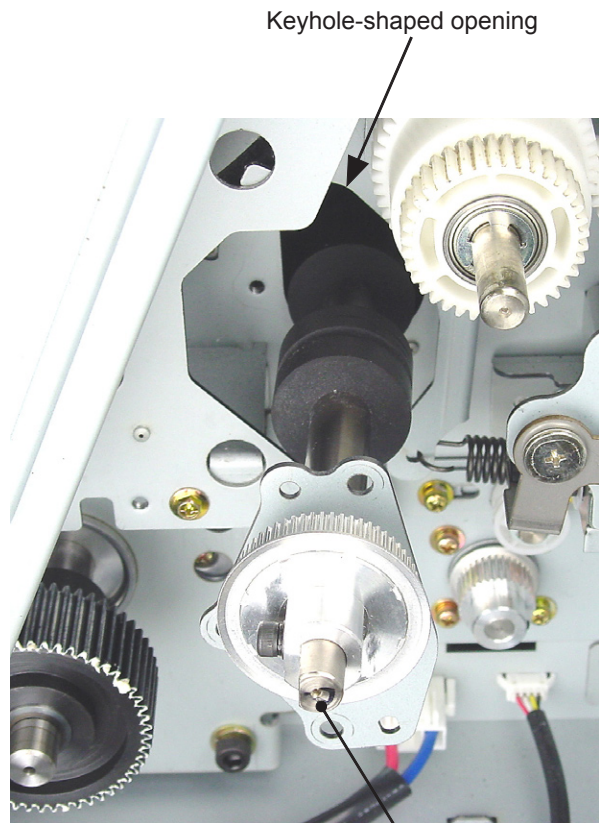


- (13) Remove the timing roller bracket mounting screws (M4x8; 3 pcs), and pull the timing roller toward the front through the larger end of the keyhole-shaped opening on the rear plate.



Timing roller bracket

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Timing roller



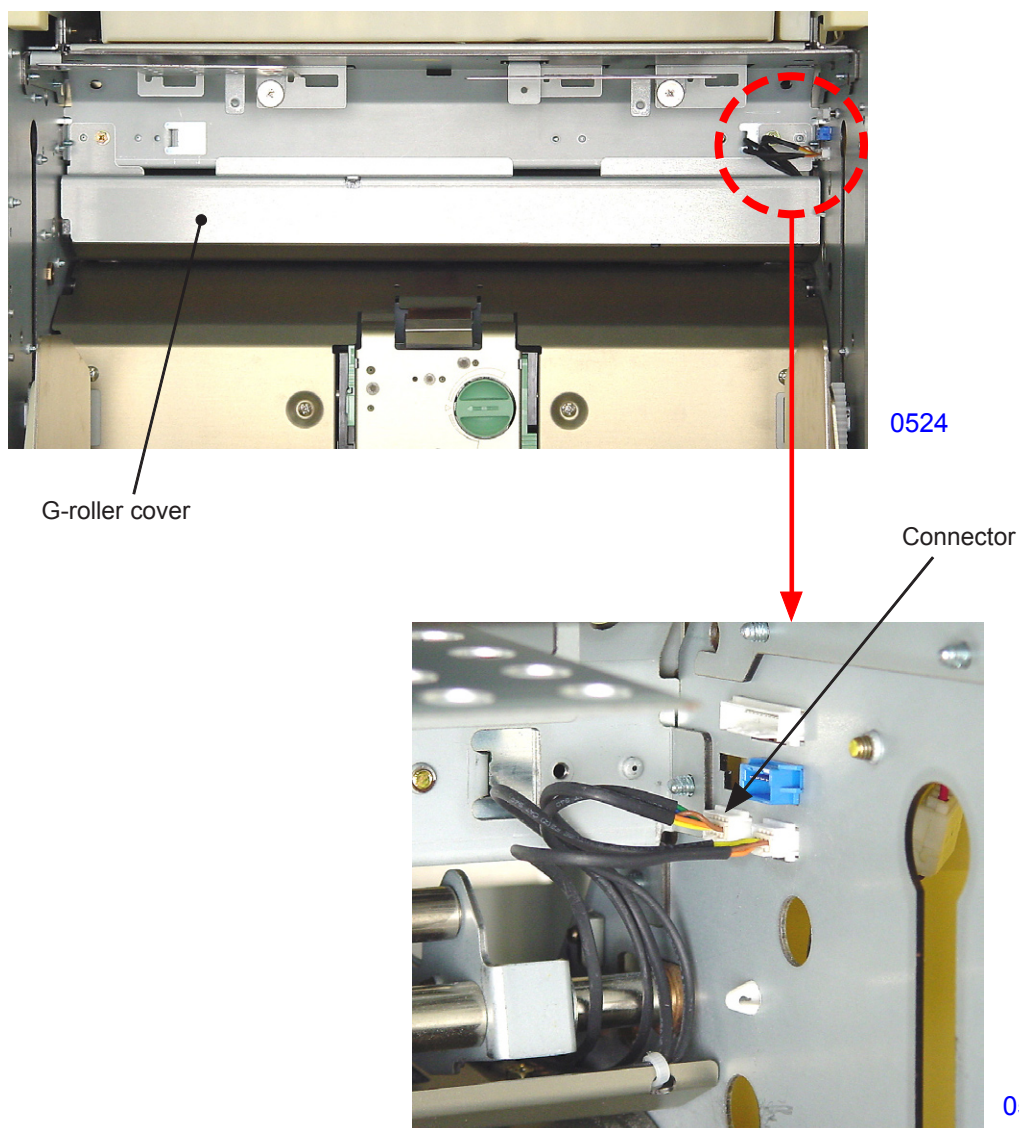
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<< Timing roller >>

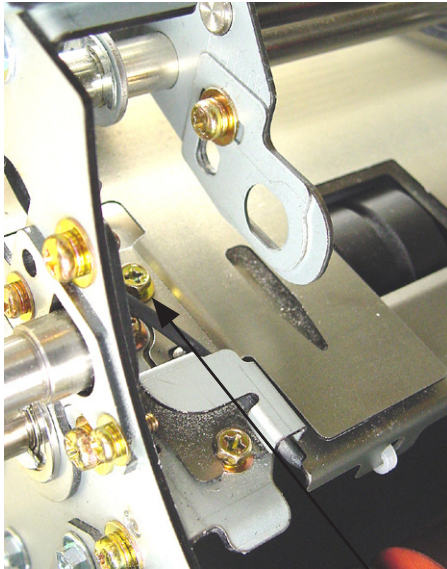
5. Removing the Paper Guide Plate (Upper)

- (1) Remove the first print drum and switch off power.
- (2) Remove the following parts:
 - Guide roller
 - Paper feed cover
 - Pickup extension shaft assembly
 - Paper feed roller assembly
 - First paper feed stay assembly
 - Guide roller pressure spring
- (3) Remove the mounting screws (M3x6; 2 pcs), then remove the G-roller cover.
- (4) Unplug the connector.

< continues to next page >

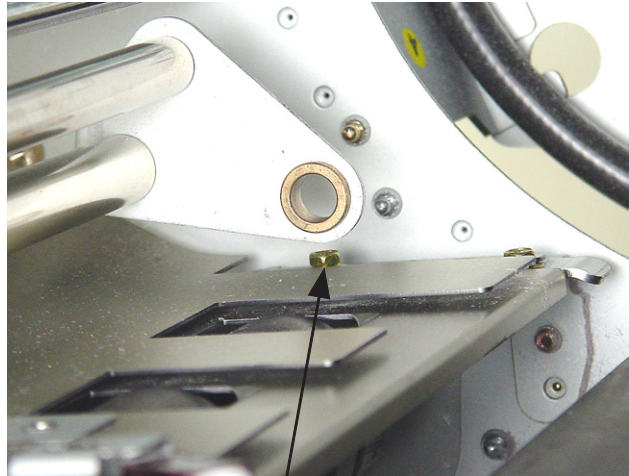


- (5) Remove the mounting screws (with double-washer, cross-recessed hexagon head, M3 x 8, 1 each) on the front and rear sides, and plate guide plate (upper) toward the paper feed tray side and remove.



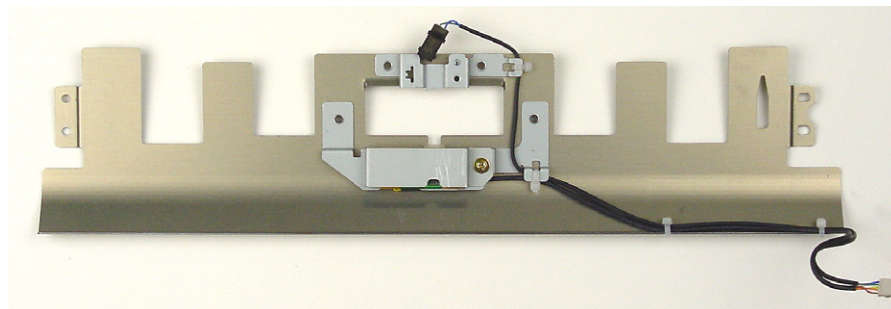
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Mounting screw



0527

Mounting screw

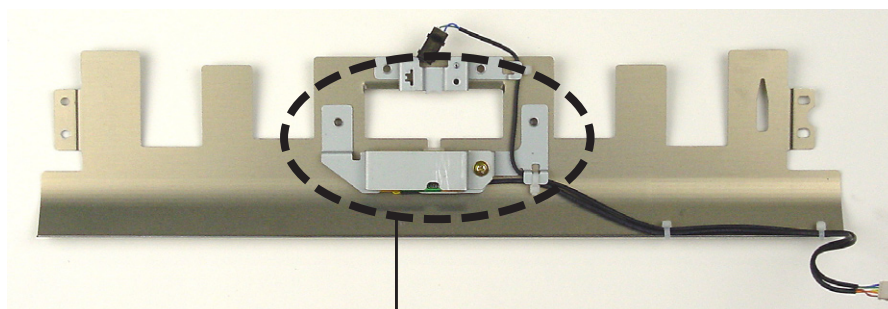


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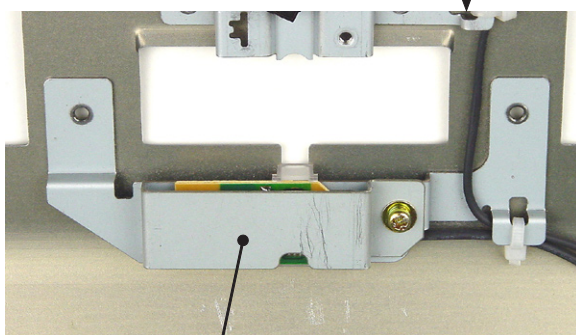
<< Paper guide plate (upper) >>

6. Removing the Paper Sensor (Light Receiver)

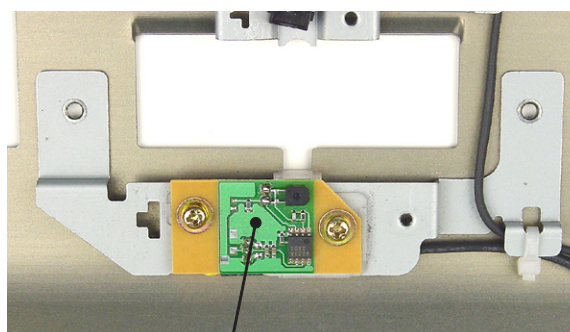
- (1) Remove the paper guide plate (upper).
- (2) Remove the multiple feed sensor shield. (with double-washer, M3 x 6, 1 pc)
- (3) Remove the mounting screws (with double-washer, M3 x 6, 2 pcs), unplug the connector, and dismount the paper sensor (light receiver).



<< Paper guide plate assembly >>



Multiple feed sensor shield



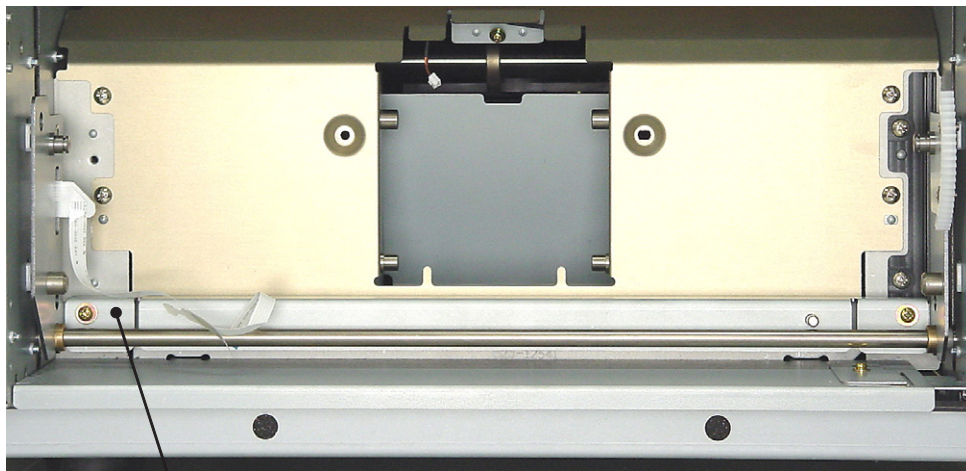
Paper sensor (light receiver)

7. Removing the Paper Guide Plate Assembly

(1) Remove the first print drum and switch off power.

(2) Remove the following parts:

- Guide roller
- Paper feed cover
- P.U. extension shaft assembly
- Paper feed roller assembly
- First paper feed stay assembly
- Paper feed tray unit
- Timing roller



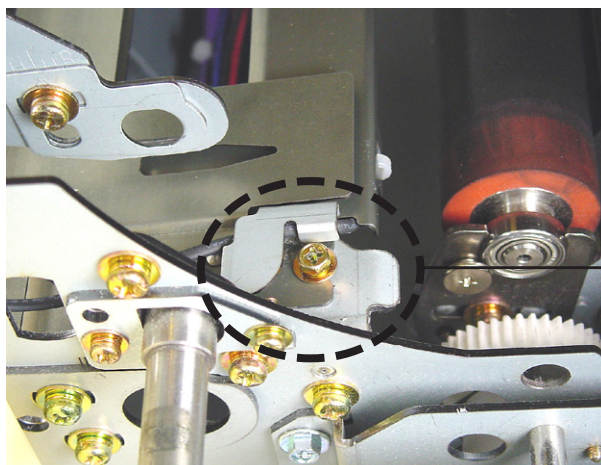
0532

E-reinforcement plate



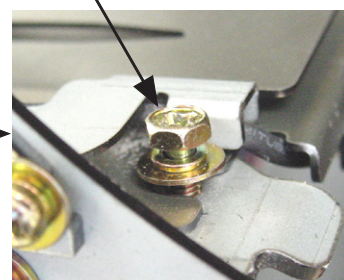
0533

Retaining screw



0534

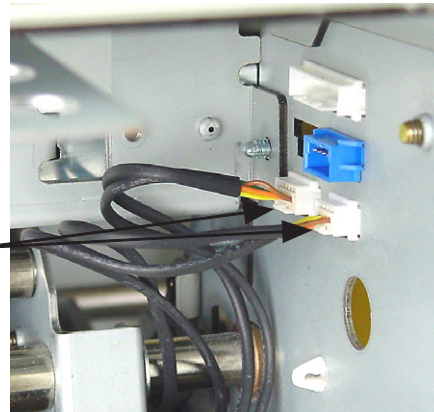
Retaining screw



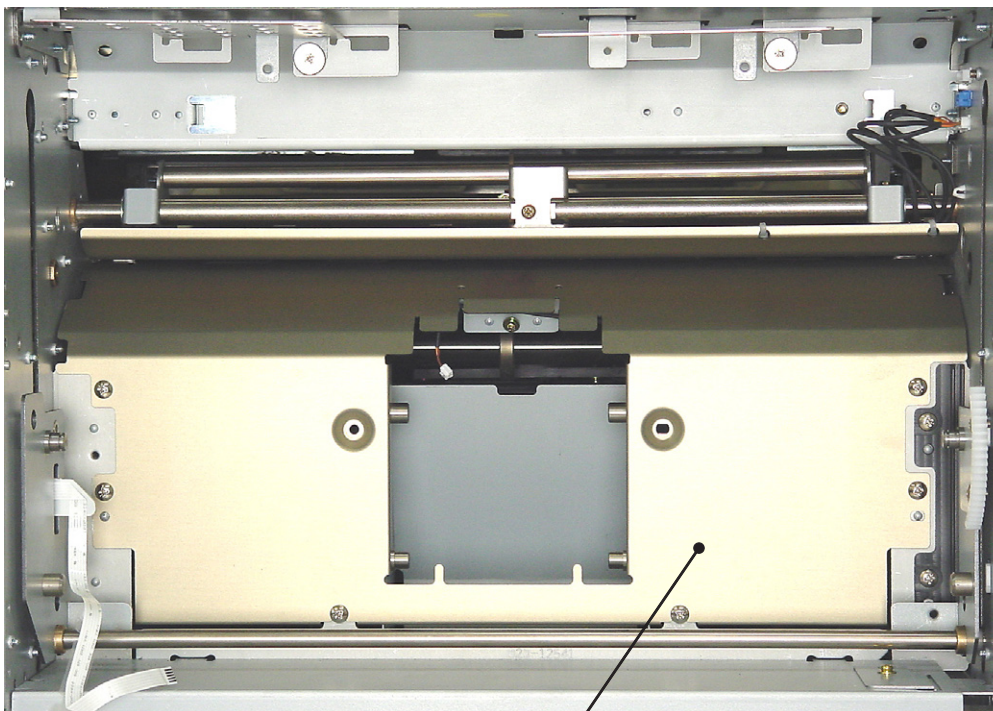
0535

- (3) Remove the E-reinforcement plate. (with double-washer, M4 x 8, 2 pcs).
- (4) Loosen the retaining screws (with double-washer, cross-recessed hexagon head, M3 x 10, 2 pcs) on the print drum side until they extend out to about half their length.
- (5) Unplug the connectors (2 locations).
- (6) Remove the mounting screws (bind, M4 x 8, 6 pcs) in the paper feed tray side and dismount the paper guide plate assembly.

Connectors



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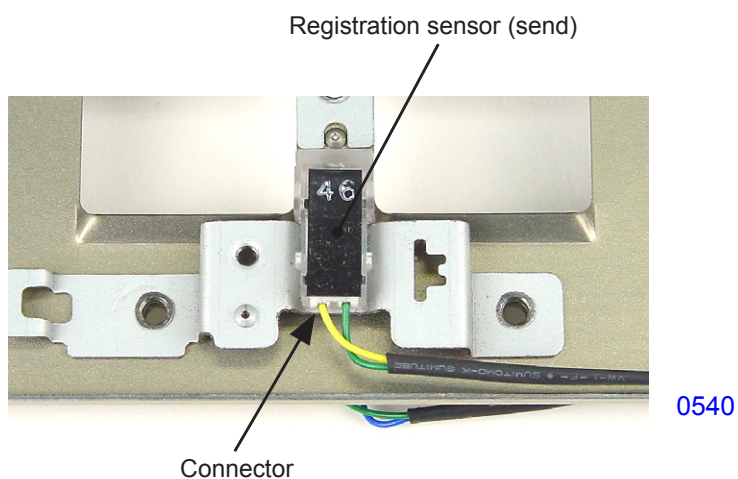
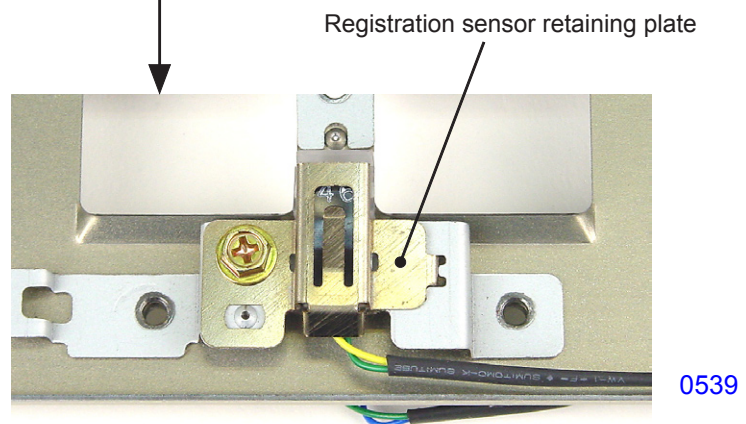
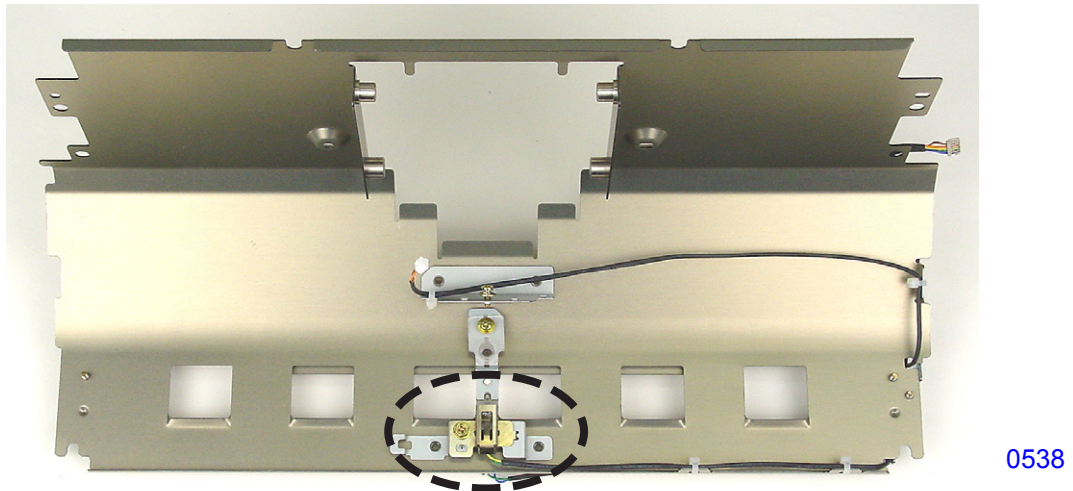


0537

Paper guide plate assembly

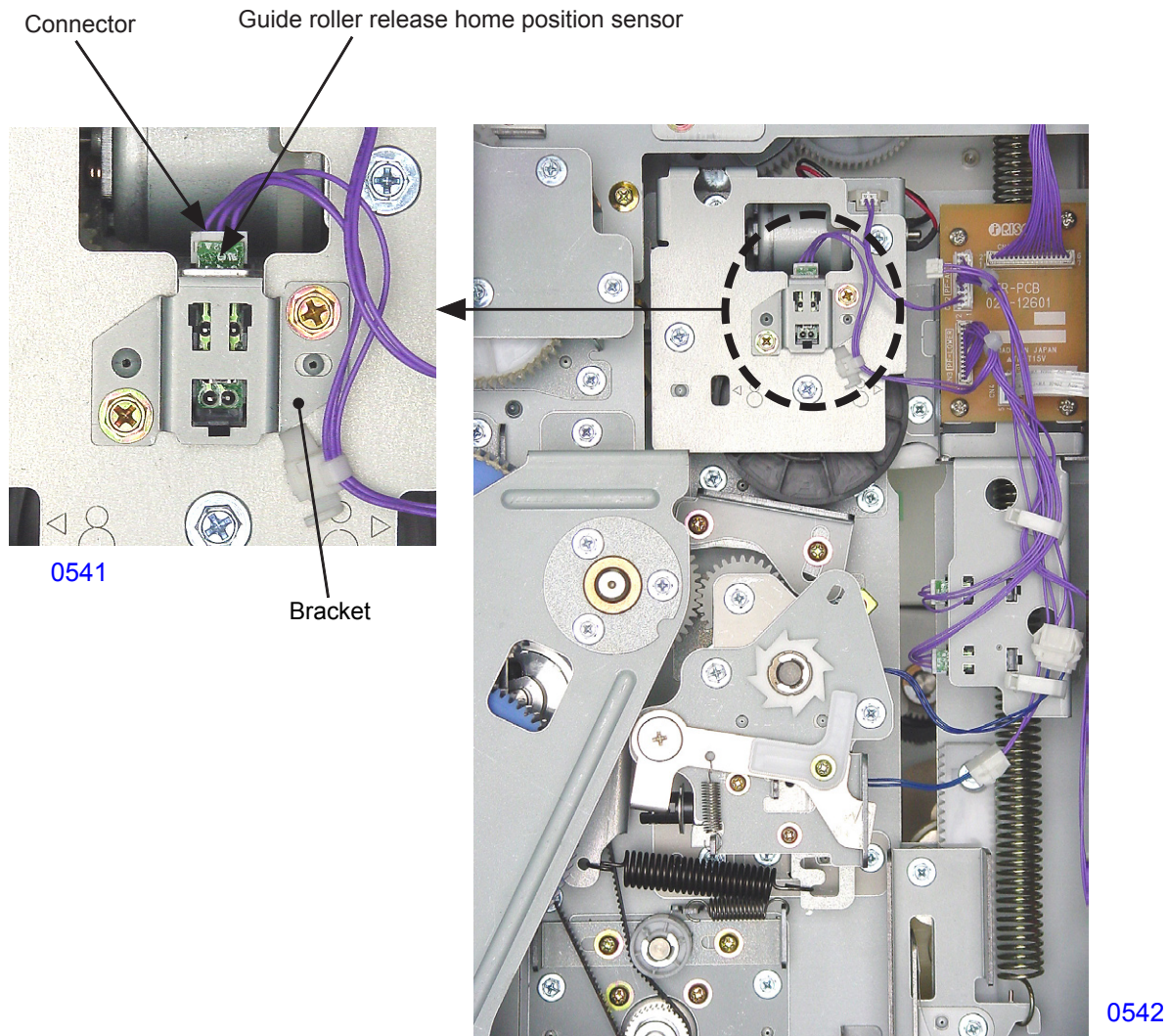
8. Removing the Registration Sensor (Send)

- (1) Remove the paper guide plate assembly.
- (2) Remove the mounting screw (RS tight, M3 x 6, 1 pc), then remove the registration sensor retaining plate.
- (3) Unplug the connector and dismount the registration sensor (send).



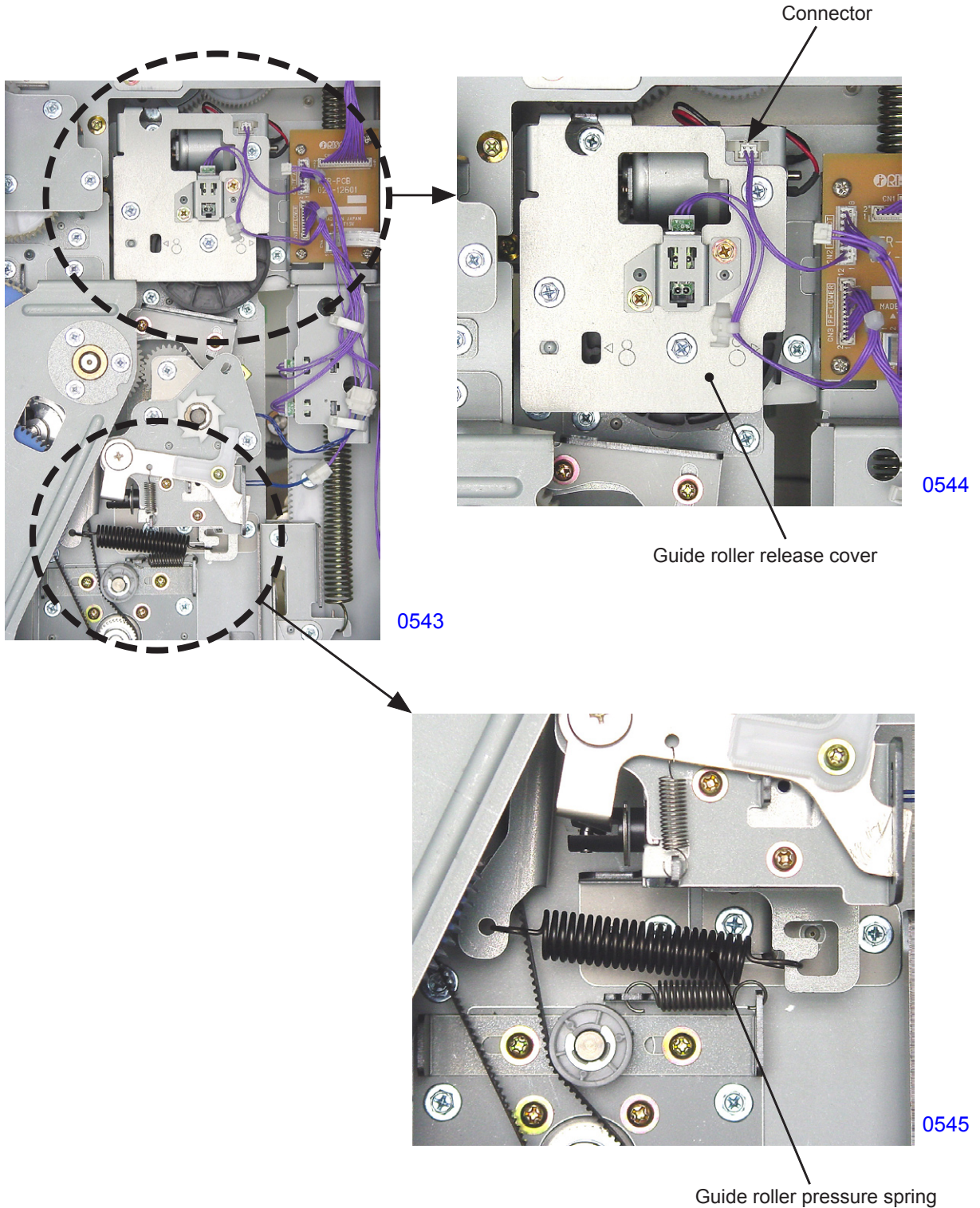
9. Removing the Guide Roller Release Home Position Sensor

- (1) Switch off power, remove the cover (rear left), and open the SH PCB bracket.
- (2) Remove the mounting screws (RS tight with round tip, M3 x 6, 2 pcs), unplug the connector, and dismount the guide roller release home position sensor together with the bracket.

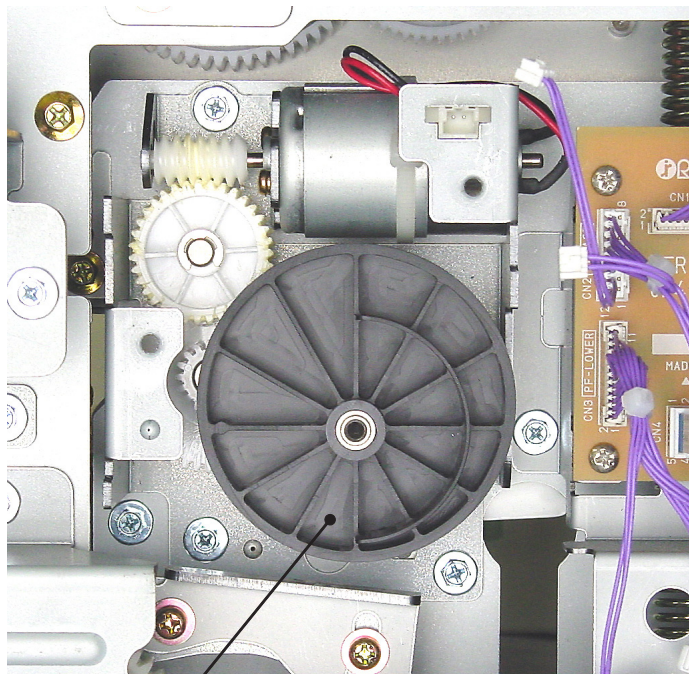


10. Removing the Guide Roller Release Motor

- (1) Switch off power, remove the cover (rear left), and open the SH PCB bracket.
- (2) Remove the guide roller pressure spring.
- (3) Unplug the connector at the upper right corner.
- (4) Remove the mounting screws (RS tight with round tip, M4 x 8, 3 pcs), then remove the guide roller release cover.

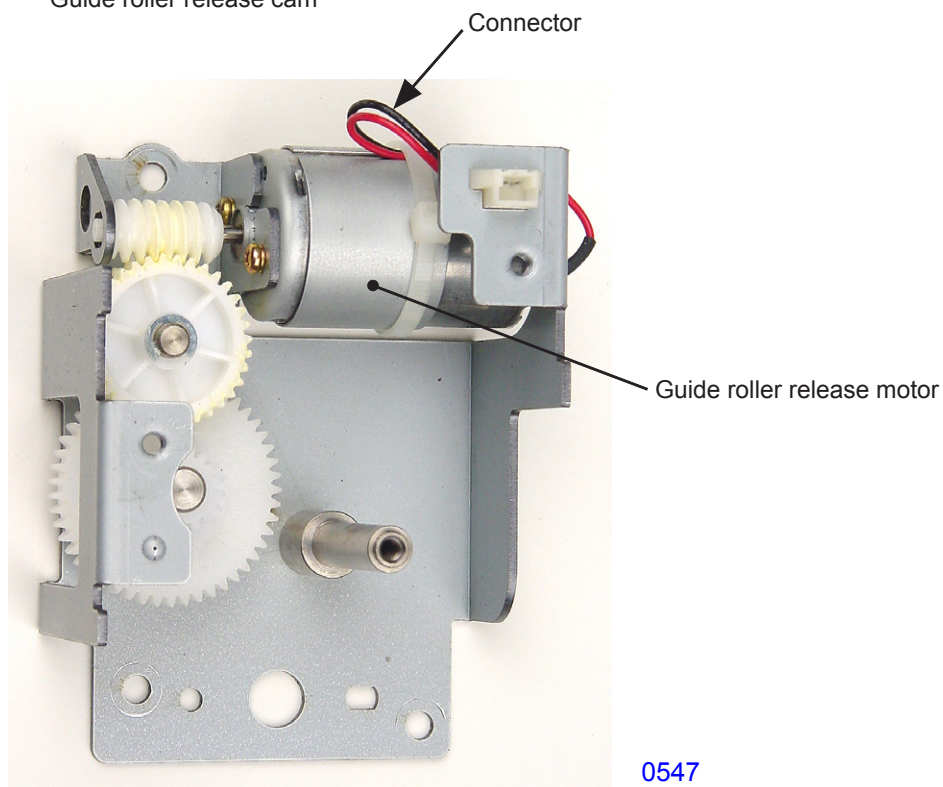


- (5) Remove the guide roller release cam.
- (6) Remove the mounting screws (RS tight, M4 x 8, 3 pcs) and dismount the guide roller release unit.
- (7) Remove the mounting screws (with washer, M3 x 5, 2 pcs), unplug the connector, and dismount the guide roller release motor.



0546

Guide roller release cam



0547

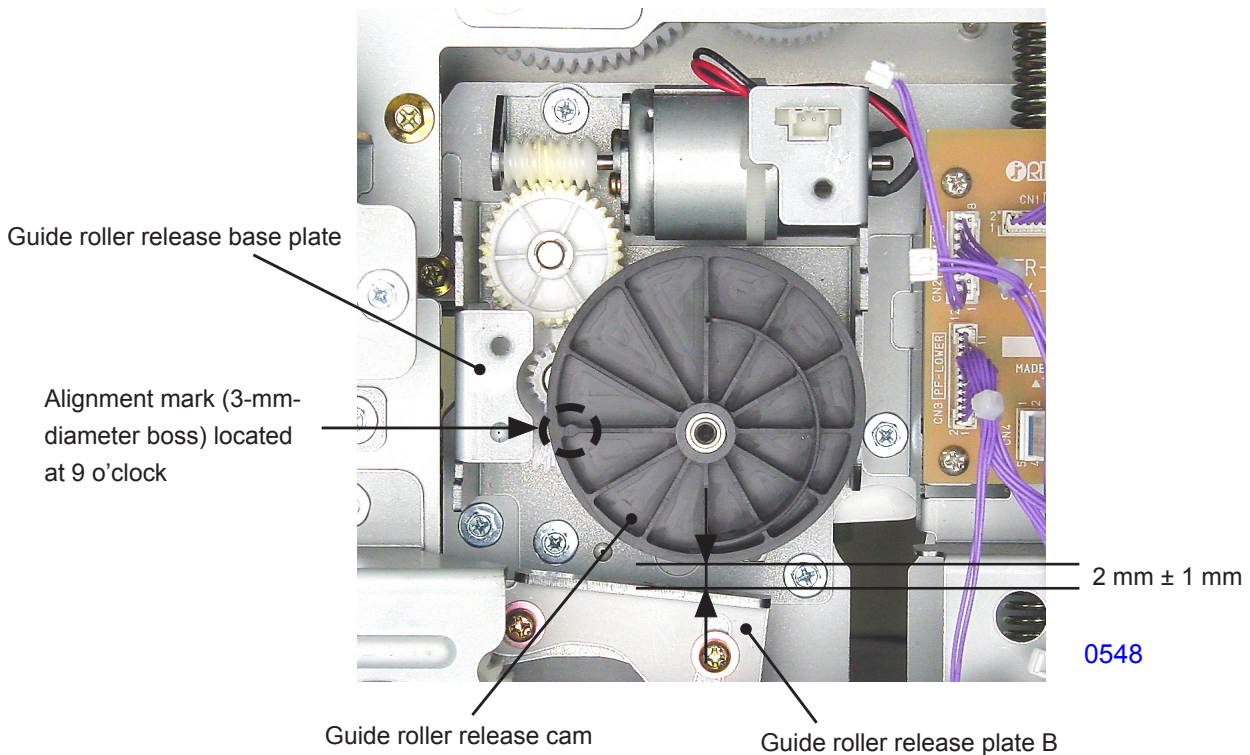
<< Guide roller release unit >>

Adjustment

1. Guide Roller Release Plate B Installation Position Adjustment

Checks and adjustment procedures

- (1) Switch off power, remove the cover (rear left), and open the SH PCB bracket.
- (2) Run Test Mode No. 702 (Guide Roller Release Motor) and shift the phase of the guide roller release cam. Switch off power.
- (3) Remove the guide roller release cover and dismount the guide roller release cam.
- (4) Install the guide roller release cam by positioning the alignment mark (3-mm-diameter boss on the rib) on the guide roller release cam toward the cut-out section (this mark is located at 9 o'clock) on the leading edge of the guide roller release base plate.
- (5) Confirm that the gap between the guide roller release plate B and the guide roller release cam is 2 ± 1 mm.
- (6) If the gap fails to meet this standard, loosen the two mounting screws on the guide roller release plate B and make the appropriate adjustments.



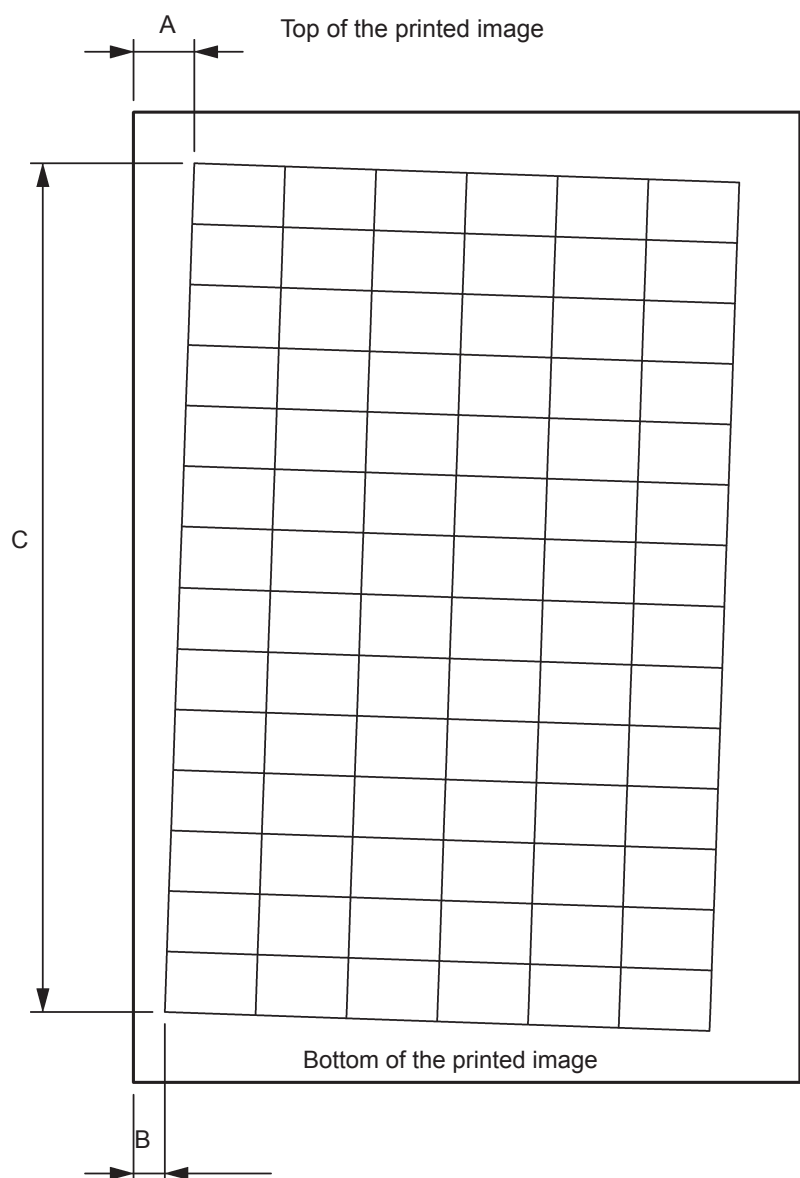
Possible problems when incorrectly adjusted

- If the gap is excessive, you may not be able to remove the jammed paper in the event of a paper jam.
- If the gap is too narrow, paper feed failure or print registration problem may occur.

2. Paper Feed Skew Adjustment

Checks and adjustment procedures

- (1) Load A3-size paper in the paper feed tray, run Test Mode No. 81 (Test Print B (Crossed Lines)), and print.
 - (2) Measure the distance from the left edge of the paper to the intersection of the leftmost vertical and top-most horizontal lines. (A in the diagram below)
 - (3) Measure the distance from the left edge of the paper to the intersection of the leftmost vertical and bottom-most horizontal lines. (B in the diagram below)
 - (4) Measure the distance between the intersections described in the above steps (2) and (3) (C in the diagram below).
 - (5) Confirm that $(A - B)/C \times 100$ is less than 0.5%.
 - (6) If the skew exceeds this standard value, move the timing roller adjusting plate and guide roller adjusting plate on the front side in the same direction and by the same amount.
- * Moving the adjusting plates one increment mark on the scale will change the paper skew by 0.25%.



0549

3. Print Start Position Adjustment

Checks and adjustment procedures

- (1) Run Test Mode No. 80 (Test Print A (Checkered)).
 - (2) Measure the distance from the leading edge of the paper to the top of the printed image and confirm that the measured value is 4 ± 1 mm.
 - (3) If the measurement falls outside the standard range, run Test Mode No. 971 (Vertical HP Paper Feed Timing Adj) and make necessary adjustments.
- * When checking the second print drum side, be sure to remove the first print drum.
 - * Increasing the setting will move the printed image toward the top. Setting increments: 1 (0.1 mm)

Checks and adjustment procedures for second print drum relative to first print drum position

- (1) Run Test Mode No. 80 (Test Print A (Checkered)), then perform printing by both the print drums (Speed 3).
 - (2) On the fifth sheet printed by the second print drum, confirm that the position of the first line at the paper leading edge does not deviate more than 2 mm from the line on the printed image made with the first print drum.
 - (3) If the measurement falls outside the standard range, run Test Mode No. 969 (Vertical Print HP Position Adj) and make necessary adjustments.
- * Increasing the setting moves the printed image toward the top. Setting increments: 1 (0.1 mm)

4. Automatic Multiple Paper Feed Adjustment

- (1) Pull out the first print drum.
- (2) Manually feed thin RISO paper into the multiple paper feed sensor light path.
- (3) Run Test Mode No. 705 (Automatic Multiple Paper Feed Adjustment).
- (4) Start Test Mode No. 722 (Multiple Paper Feed Sensor) and confirm that the panel displays a value between 484 and 508 (496 ± 12).

5. Automatic Registration Sensor Adjustment

- (1) Pull out the first print drum.
- (2) Manually feed thin RISO paper into the registration sensor light path.
- (3) Run Test Mode No. 709 (Automatic Registration Sensor Adjustment).

CHAPTER 6: PRESSURE SECTION

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- 1. Pressure Lever Assembly Installation Position Adjustment..... 6-12

Mechanism

1. Pressure Mechanism

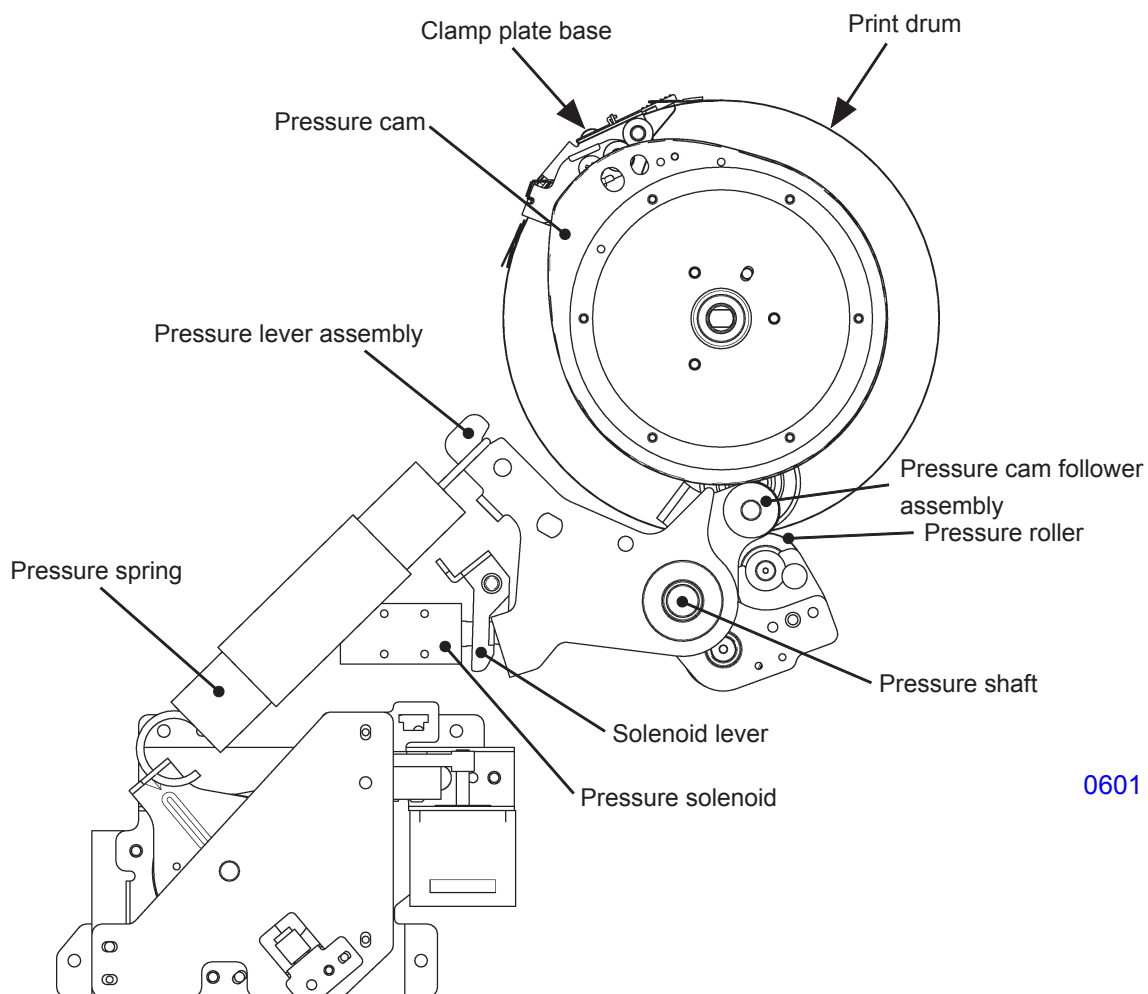
The main motor switches ON at the start of a print job, and the pressure solenoid switches ON when the print drum rotates to a specified angle.

When the clamp plate base of the print drum approaches the pressure roller, the lobe of the pressure cam pushes the pressure cam follower assembly and turns it clockwise. This rotation causes the pressure cam follower assembly to push against the pressure lever assembly, causing the solenoid lever to disengage from the pressure lever assembly and descend.

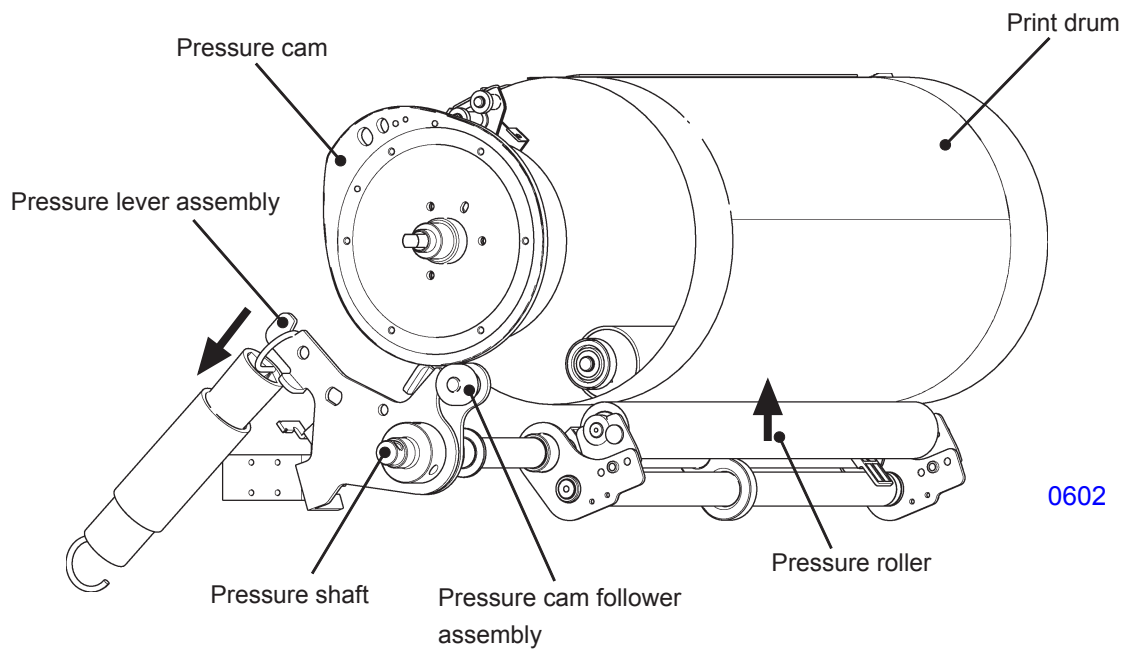
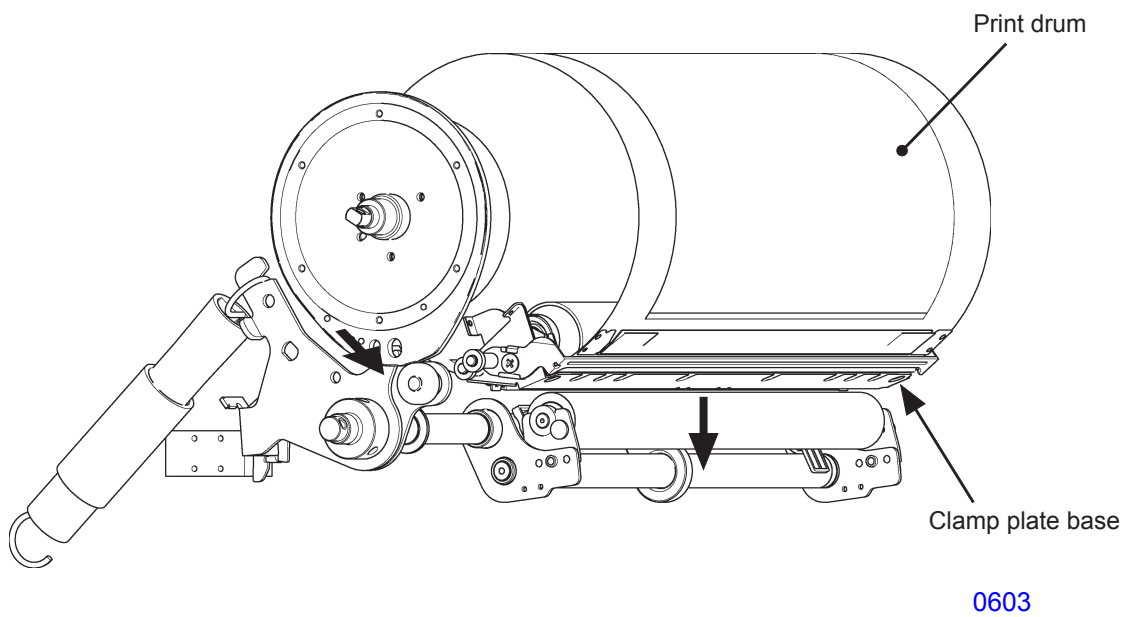
When the lobe of the pressure cam passes, the pressure cam follower assembly rotates counterclockwise. Because the pressure lever assembly is pulled by the pressure spring and rotates together with the pressure cam follower assembly, the pressure shaft installed in the pressure lever assembly also rotates counterclockwise. As a result, the pressure roller rises and presses against the print drum.

During printing, the pressure cam pushes the pressure cam follower assembly to lower the pressure roller, keeping the pressure roller from contacting the print drum clamp plate base. The pressure solenoid remains ON.

After printing ends, the pressure solenoid turns OFF when the print drum reaches a specified angle.



0601

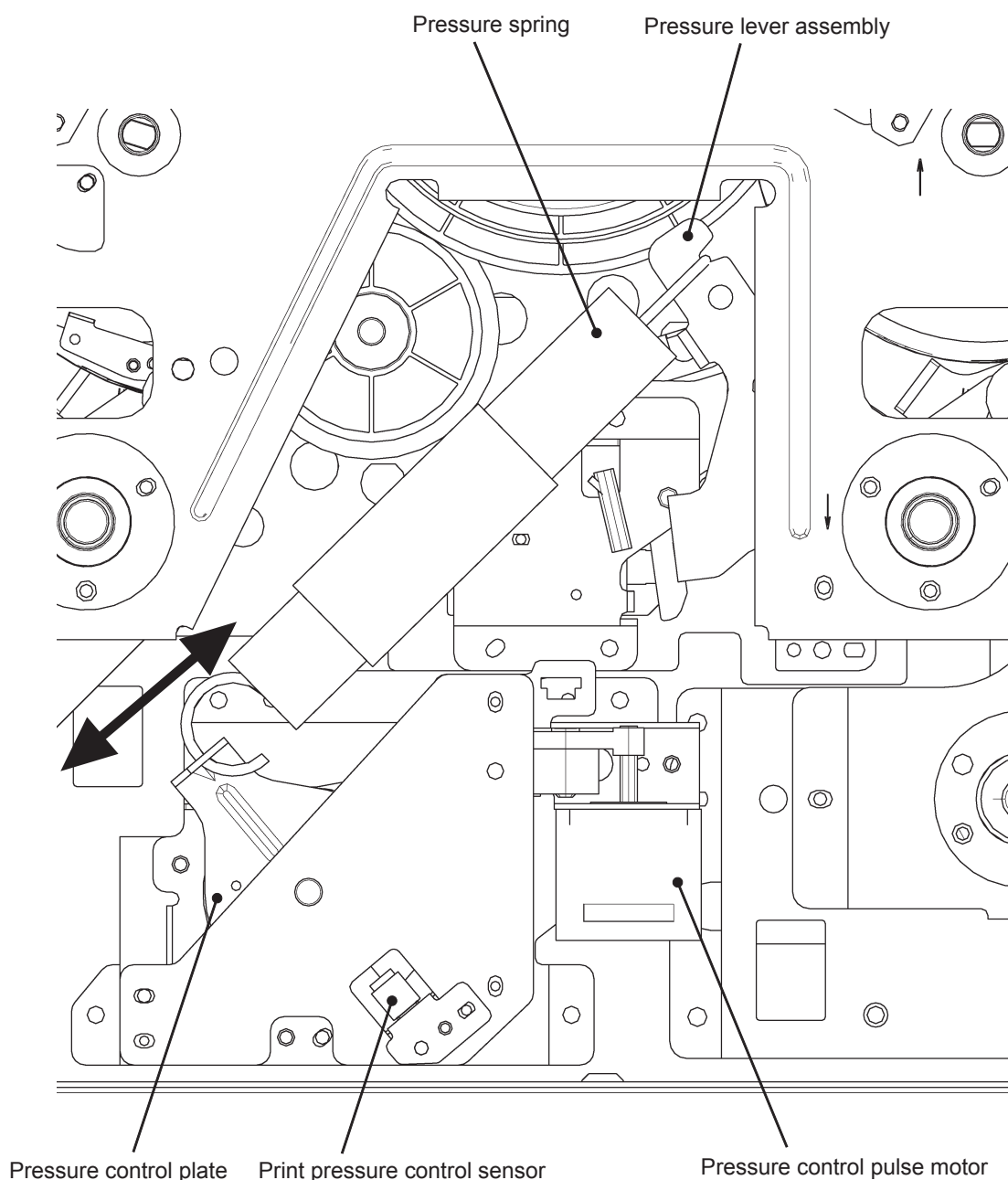
Pressure roller in raised position**Pressure roller in lowered position**

2. Pressure Control Mechanism

Pressing the < ← > or < → > key for print density switches ON the pressure control pulse motor and moves the pressure control plate. The movement of the pressure control plate varies the tension of the pressure spring. Since this changes the force applied to the pressure lever assembly, the force of the pressure roller applied to the print drum also changes, altering print density. However, during actual operations, the pressure control pulse motor switches ON only after the Start key is pressed.

Pressure also varies with printing speed and print density settings, ink color, time since the print drums last operated, and the print drum internal temperature.

The print pressure control sensor checks the standard pressure control position.



0604

Disassembly



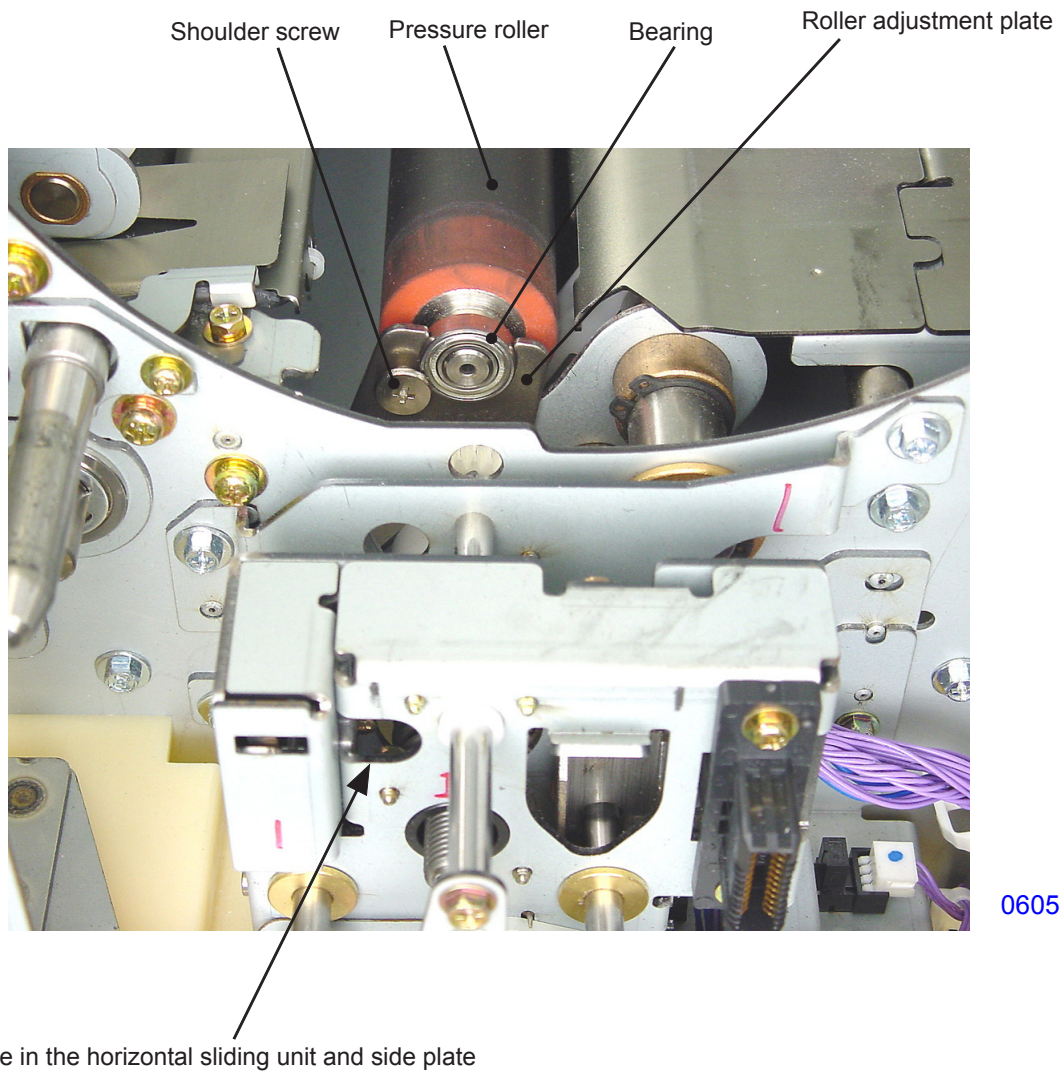
PRECAUTIONS FOR DISASSEMBLY OF MAIN DRIVE SECTION AND PRESSURE SECTION

Following removal of the main cover, the pressure springs must be removed before disassembly of the main drive or pressure sections. Failure to remove the pressure springs may result in sudden rotation of gears or cams from the force of the springs, resulting in injury.

To prevent accidents, always remove the pressure springs (on both first print drum side and second print drum side) at the start of disassembly. Reattach the pressure springs (first print drum side and second print drum side) only at the end of reassembly.

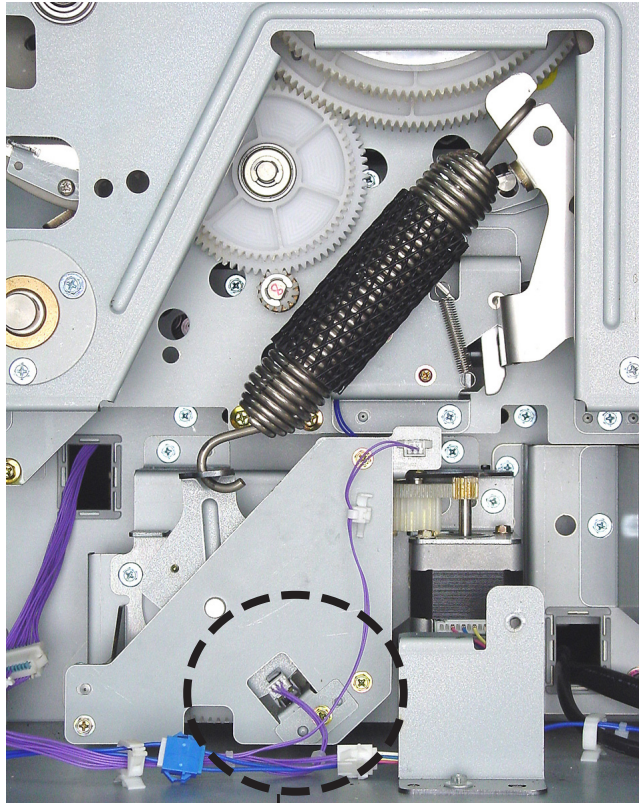
1. Removing the Pressure Roller

- (1) Pull out the print drums and switch off power.
- (2) Insert a screwdriver into the hole in the horizontal sliding unit and side plate on the front side and remove the shoulder screw.
- (3) Pull the pressure roller forward until the pressure roller bearing disengages from the roller adjustment plate, then lift and remove the roller.



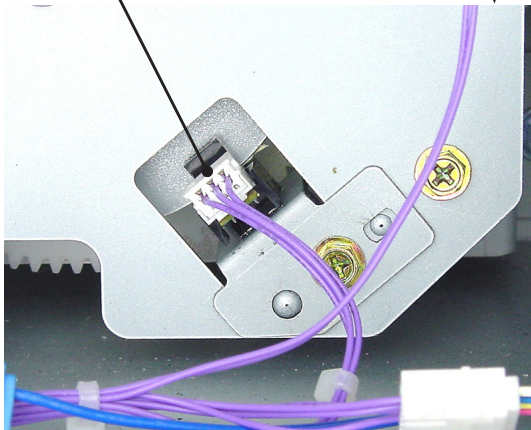
2. Removing the Print Pressure Control Sensor

- (1) Switch off power, remove the cover (rear left) and the cover (rear right), and open the power supply/system PCB bracket.
- (2) Unplug the connector, remove the mounting screw (RS tight with round tip, M3 x 6, 1 pc), and dismount the print pressure control sensor together with the bracket.



0606

Print pressure control sensor



0607

3. Removing the Pressure Control Pulse Motor

- (1) Remove the pressure springs.
 - * Refer to <1. Removing Pressure Springs> in <Chapter 3 Main Drive Section>.
- (2) Launch test mode.

<< For first print drum side >>

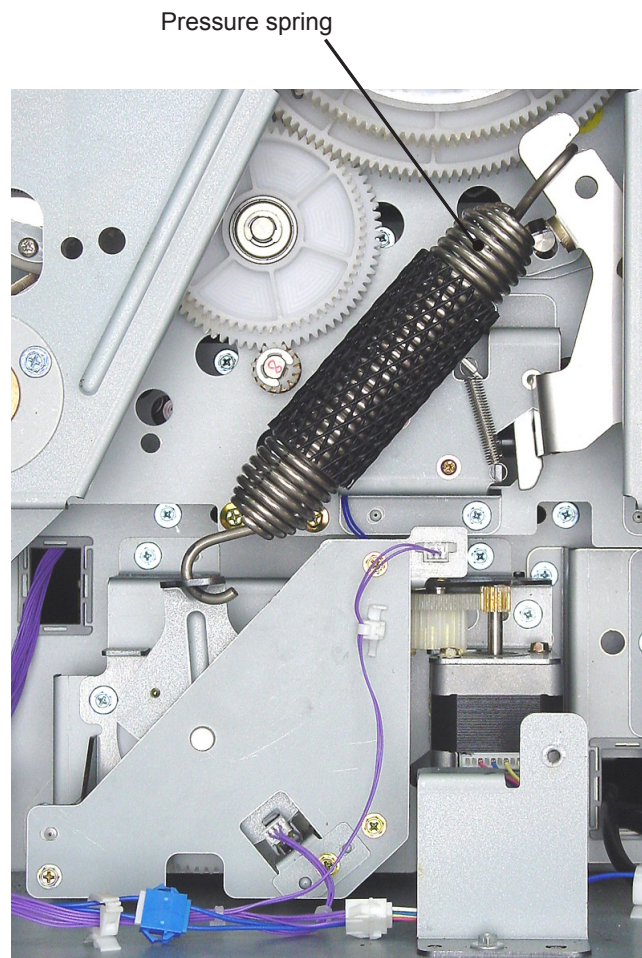
- (3) Run Test Mode No. 904 (Print-pressure home positioning) for the first print drum side and switch off power.

<< For second print drum side >>

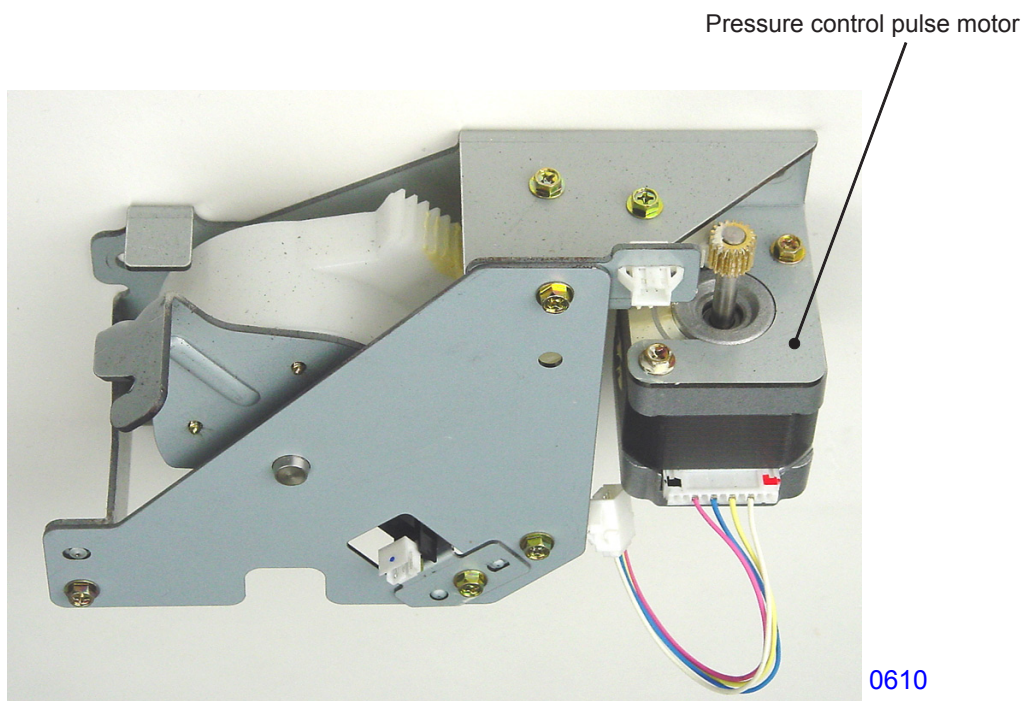
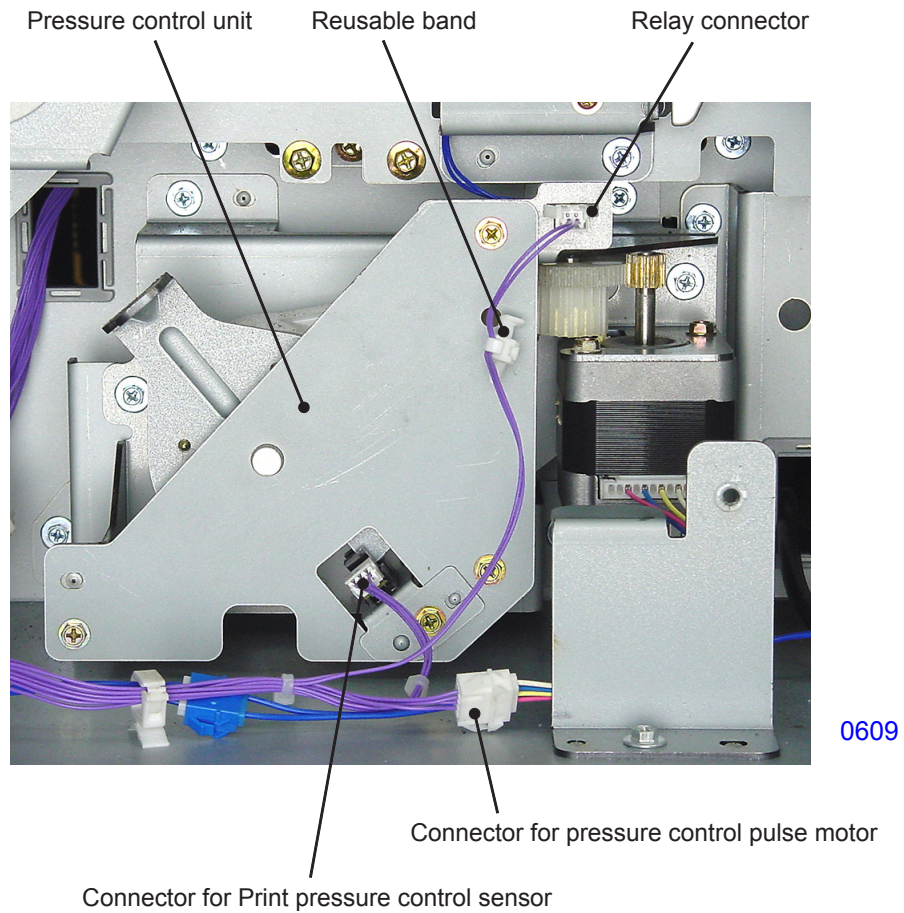
- (3) Run Test Mode No. 904 (Print-pressure home positioning) for the second print drum side and switch off power.

<< Common procedure >>

- (4) Unplug the connector for the print pressure control sensor and the connector for the pressure control pulse motor.
- (5) Unplug the connectors from both sides of the relay connector mounted on the panel and remove the reusable band.
- (6) Remove the mounting screws (RS tight with round tip, M4 x 8, 3 pcs) and dismount the pressure control unit.
- (7) Remove the mounting screws (RS tight with round tip, M3 x 6, 2 pcs) and dismount the pressure control pulse motor.



0608



<< Pressure control unit >>

4. Removing the Pressure Solenoid

(1) Remove the pressure springs.

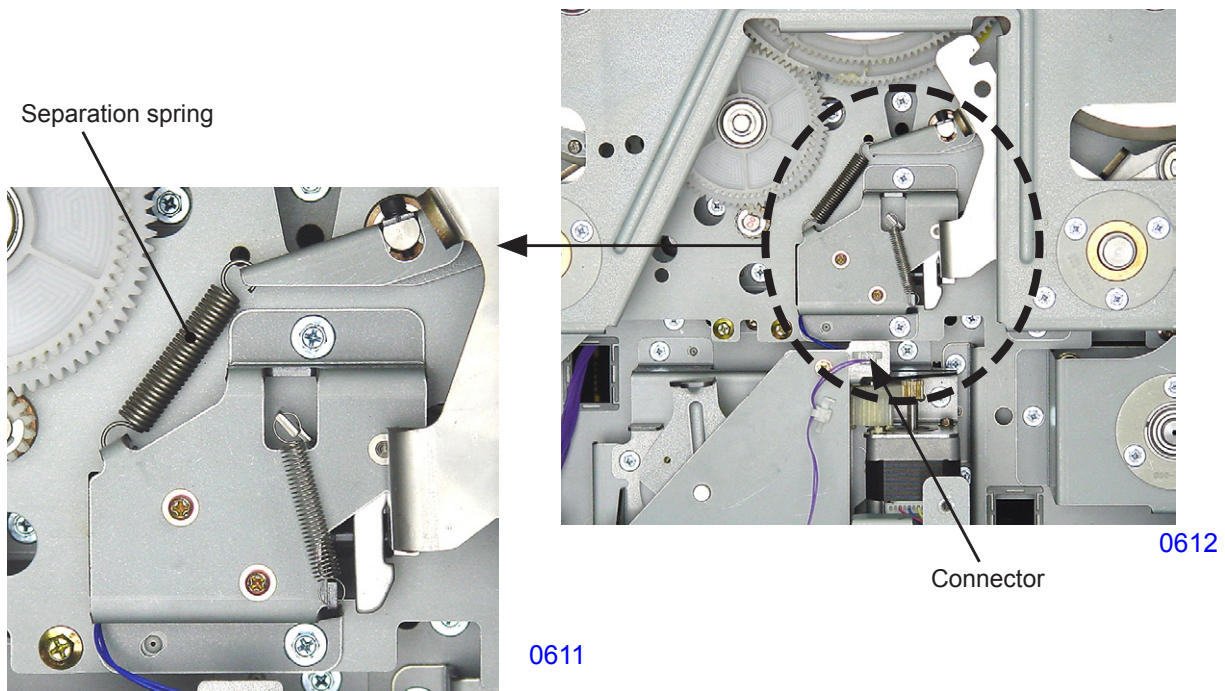
* Refer to <1. Removing Pressure Springs> in <Chapter 3 Main Drive Section>.

(2) Remove the separation spring.

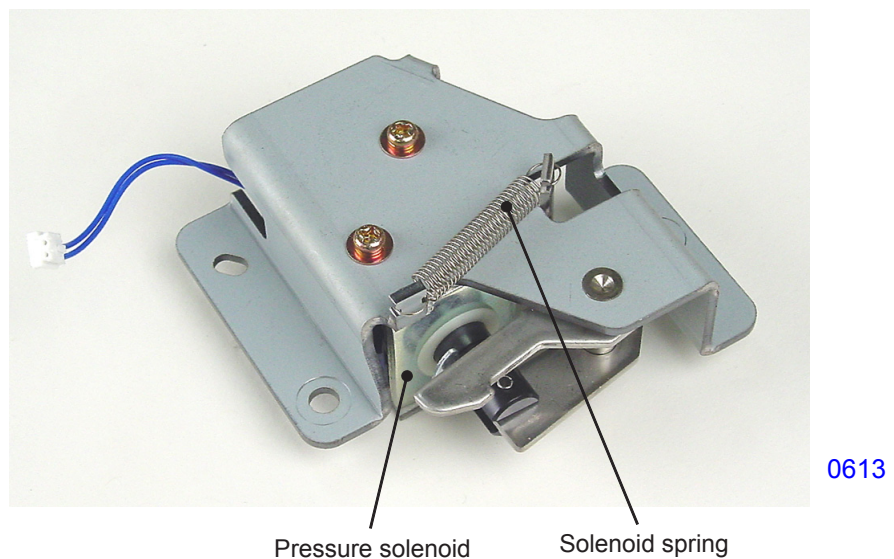
(3) Unplug the connector, remove the mounting screws (RS tight with round tip, M4 x 8, 2 pcs), and dismount the pressure solenoid assembly.

(4) Remove the solenoid spring.

(5) Remove the mounting screws (with double-washer, M3 x 6, 2 pcs) and dismount the pressure solenoid.



<< Pressure solenoid assembly >>

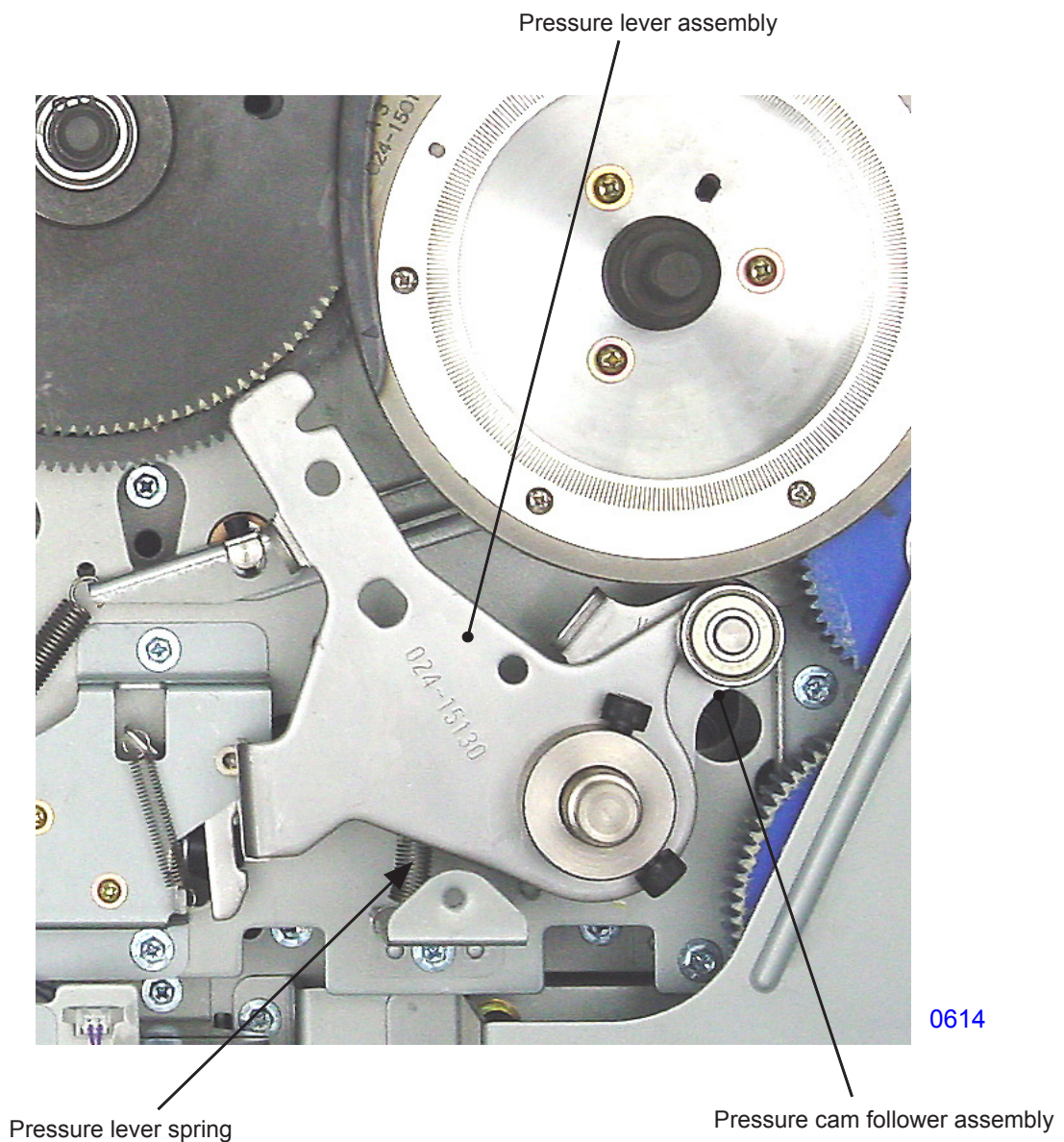


5. Removing the Pressure Lever

- (1) Remove the pressure springs. (Refer to the section on the main drive section.)
- (2) Move the print drum on the side where the pressure lever is to be removed to position-B.
- (3) Remove the main cover. (Refer to the section on the main drive section.)
- (4) Loosen the mounting screws (cap screw, M6 x 10, 2 pcs) and dismount the pressure lever assembly.
- (5) Remove the pressure lever spring and dismount the pressure cam follower assembly.

<< Precautions for installation >>

- Be sure to adjust the pressure lever installation position.

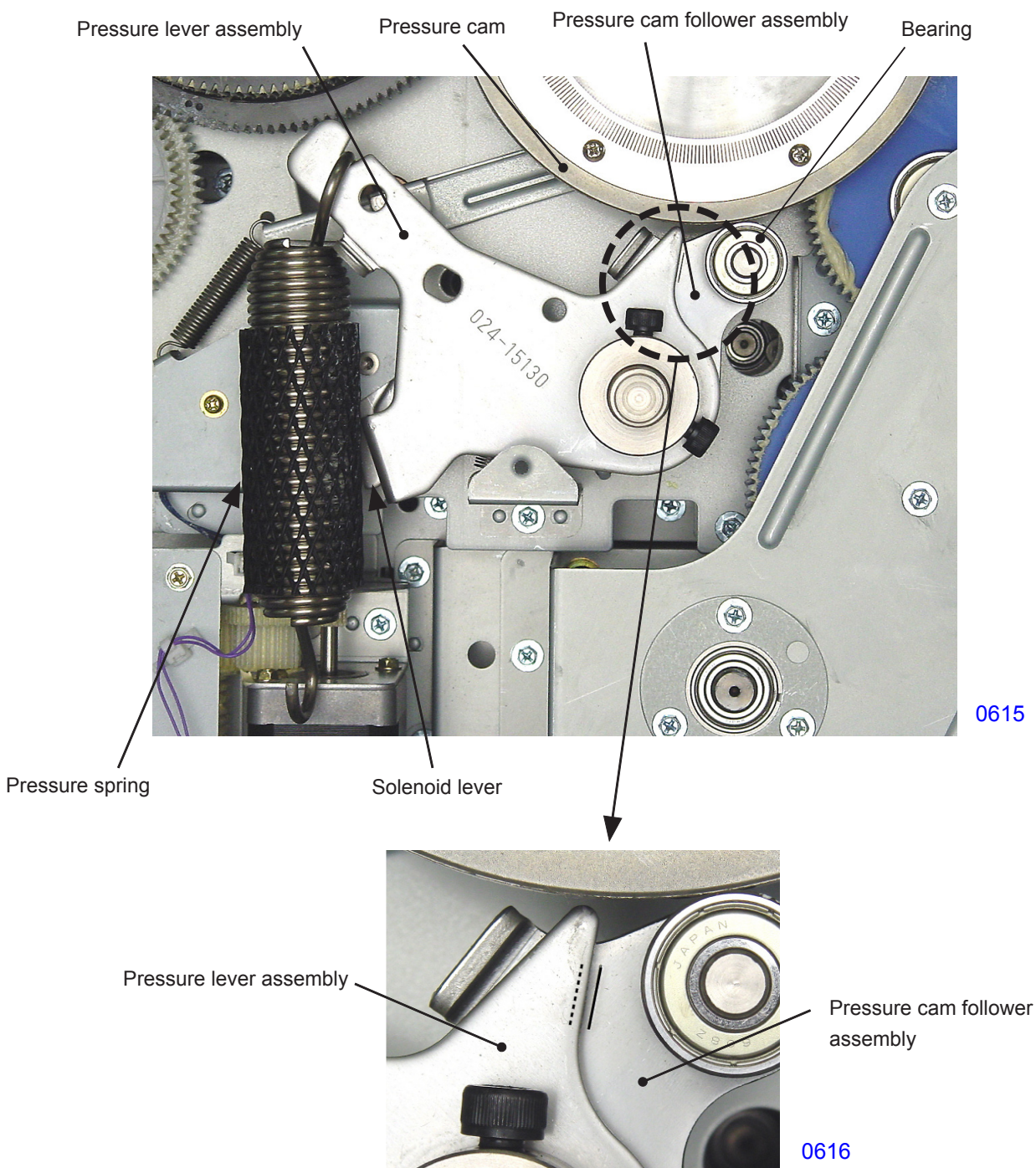


Adjustment

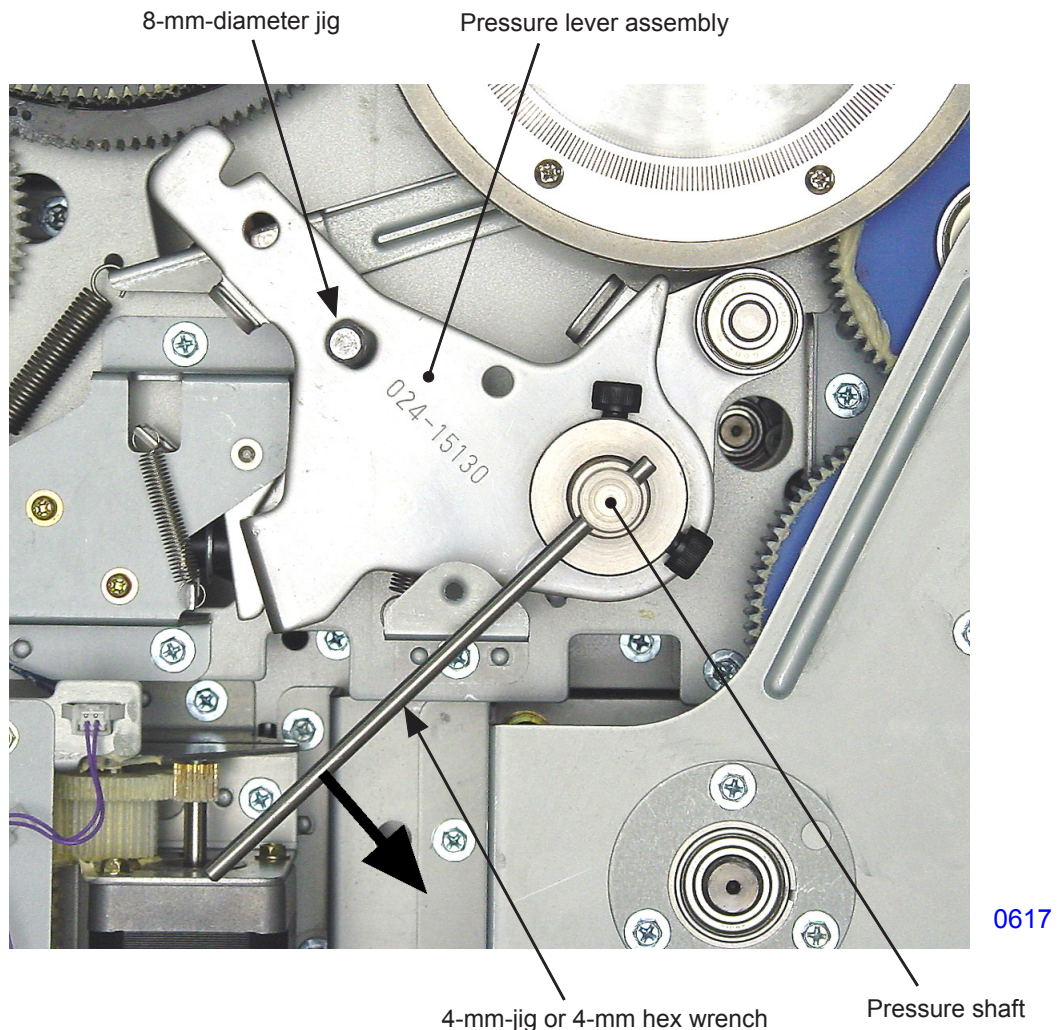
1. Pressure Lever Assembly Installation Position Adjustment

Checks and adjustment procedures

- (1) Remove the main cover assembly. (Refer to the section on the main drive section.)
- (2) Hook the pressure spring onto the pressure lever assembly.
- (3) Release the solenoid lever lock and allow the pressure roller to contact the print drum under the force applied by the pressure spring.
- (4) With the bearing of the pressure lever assembly resting on the low section on the pressure cam, confirm that the stamped line on the pressure lever assembly is located between the two stamped lines on the pressure cam follower assembly.



- (5) If the stamped line on the pressure lever assembly is not at the position specified in step (4), disengage the pressure spring and loosen the two cap screws on the pressure lever assembly.
- (6) Align the positioning hole on the pressure lever assembly with the positioning hole on the sub-frame and insert the 8-mm-diameter jig into the holes.
- (7) Insert the 4-mm-diameter jig or 4-mm hex wrench into the hole in the pressure shaft and turn in the direction indicated by the arrow. With the pressure roller lightly contacting the print drum, tighten the two cap screws on the pressure lever assembly.
- (8) Perform the checks described in steps (2) through (4). If the criteria are not met, repeat steps (5) through (7).



Possible problems when incorrectly adjusted

- If the stamped line on the pressure lever assembly is shifted to the left, pressure will weaken, potentially resulting in low print density. Since this shift also causes the timing of the pressure roller vertical movement to deviate, ink leaks may occur.
- If the stamped line on the pressure lever assembly is shifted to the right, the amount of movement of the pressure roller from the clamp plate base will drop. This may cause the pressure roller to contact and damage the clamp plate base. Since this shift also causes the timing of the pressure roller vertical movement to deviate, ink leaks may occur.

MEMO

CHAPTER 7: CENTER TRANSPORT SECTION

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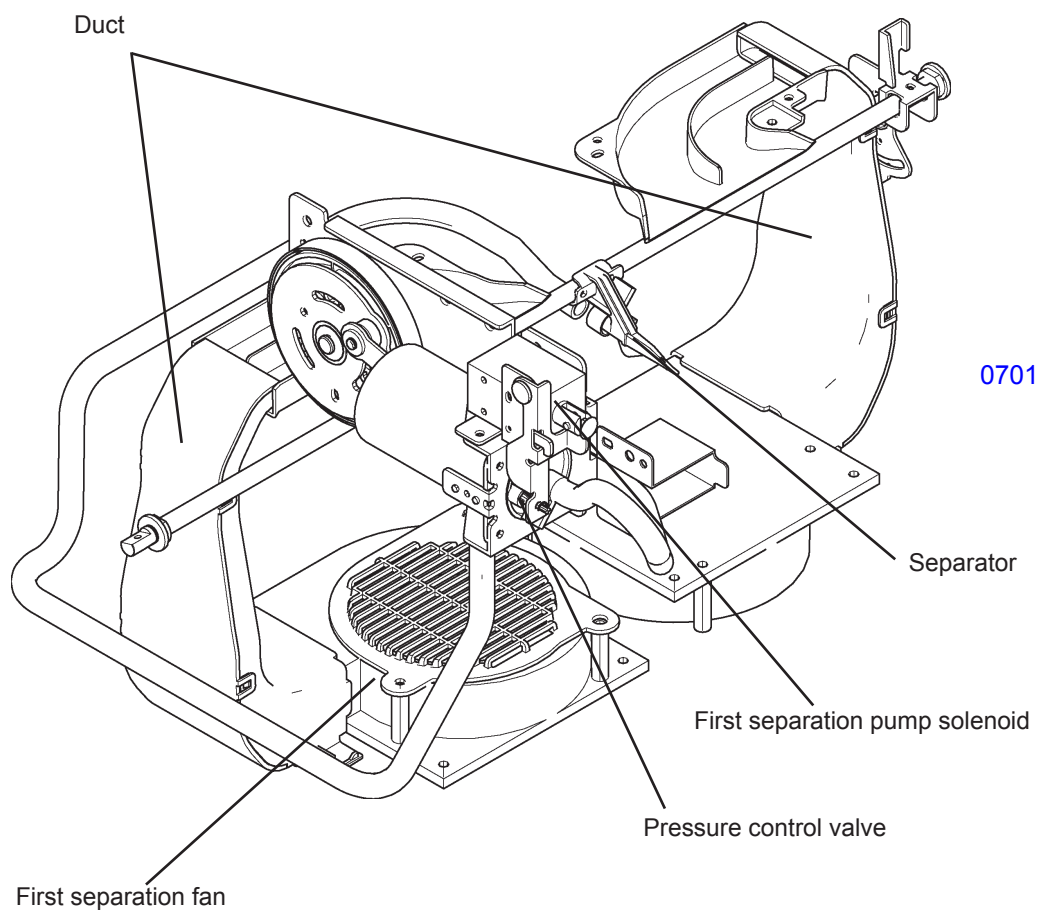
1. Separator Position Adjustment..... 7-22

Mechanism

1. Paper Separation Mechanism (Same as on the Second Print Drum Side)

When the first print drum is used for printing, the first separation pump solenoid switches ON at the start of a print job and closes the pressure control valve to allow air to escape from the separator. The first separation fan also switches ON. The first separation pump solenoid and the first separation fan remain ON during printing, switching OFF when the print job is completed.

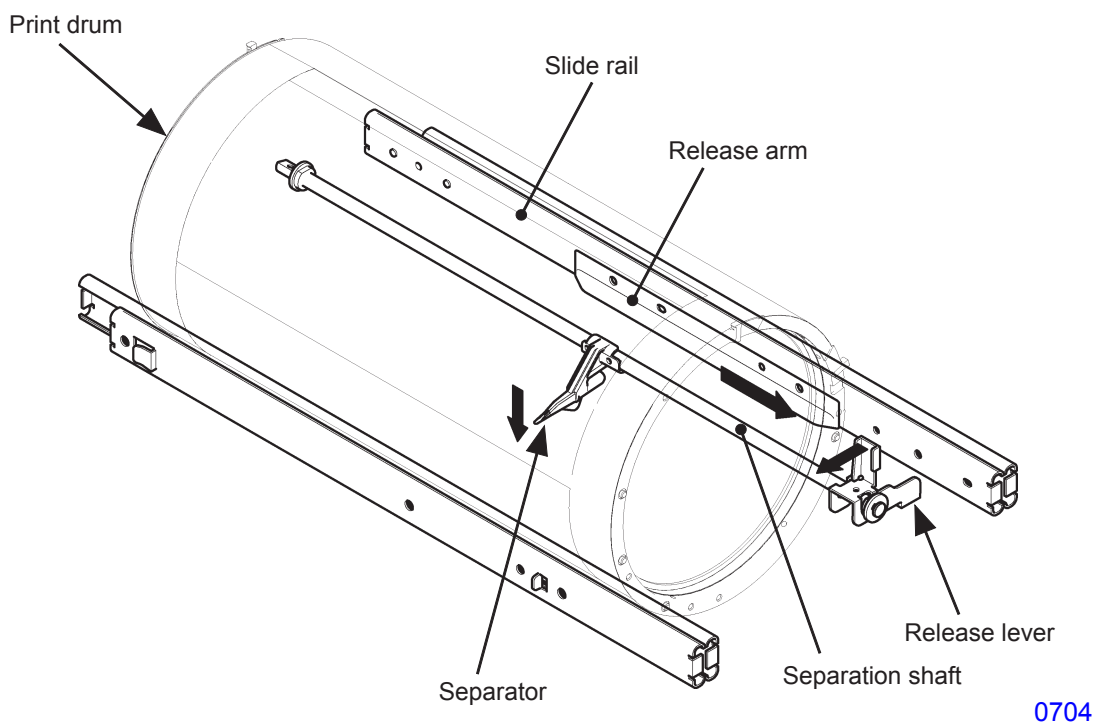
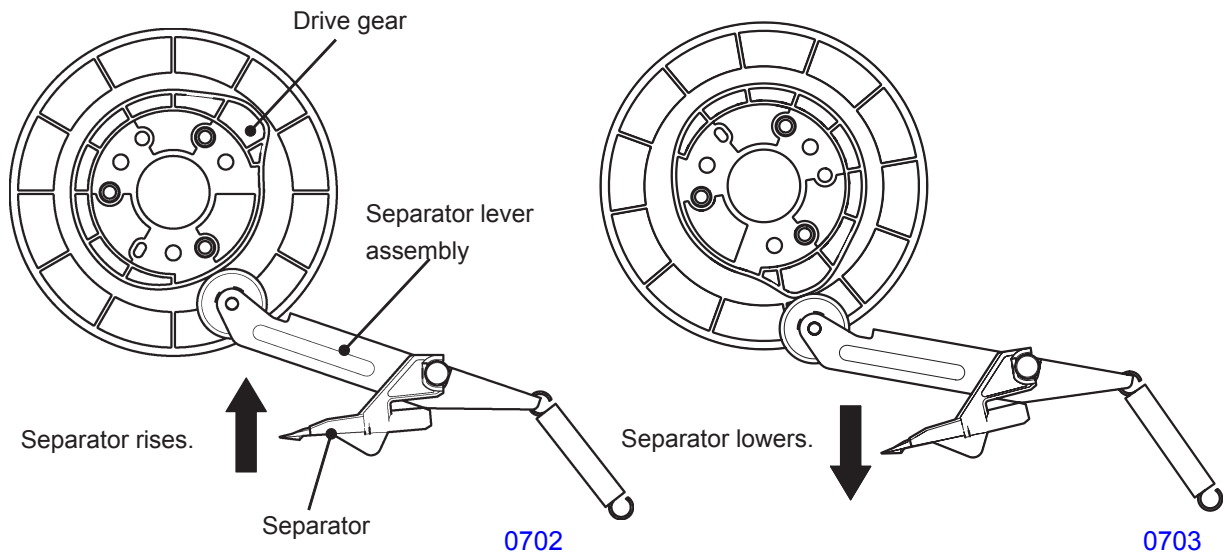
The printed paper is separated from the print drum by the separator. Air is ejected from the separator directed from the separation fan through the duct and out from the nozzle.



2. Separator Mechanism (Same as on the Second Print Drum Side)

When paper is separated from the print drum, the separator is positioned close to the print drum. However, as the print drum rotates and the clamp plate base of the print drum approaches the separator, the cam on the back side of the drive gear pushes the separator lever assembly, turning the separation shaft and moving the separator away from the print drum.

Pulling out the print drum causes the release arm attached to the slide rail to push the release lever, turning the separation shaft and moving the separator away from the print drum.



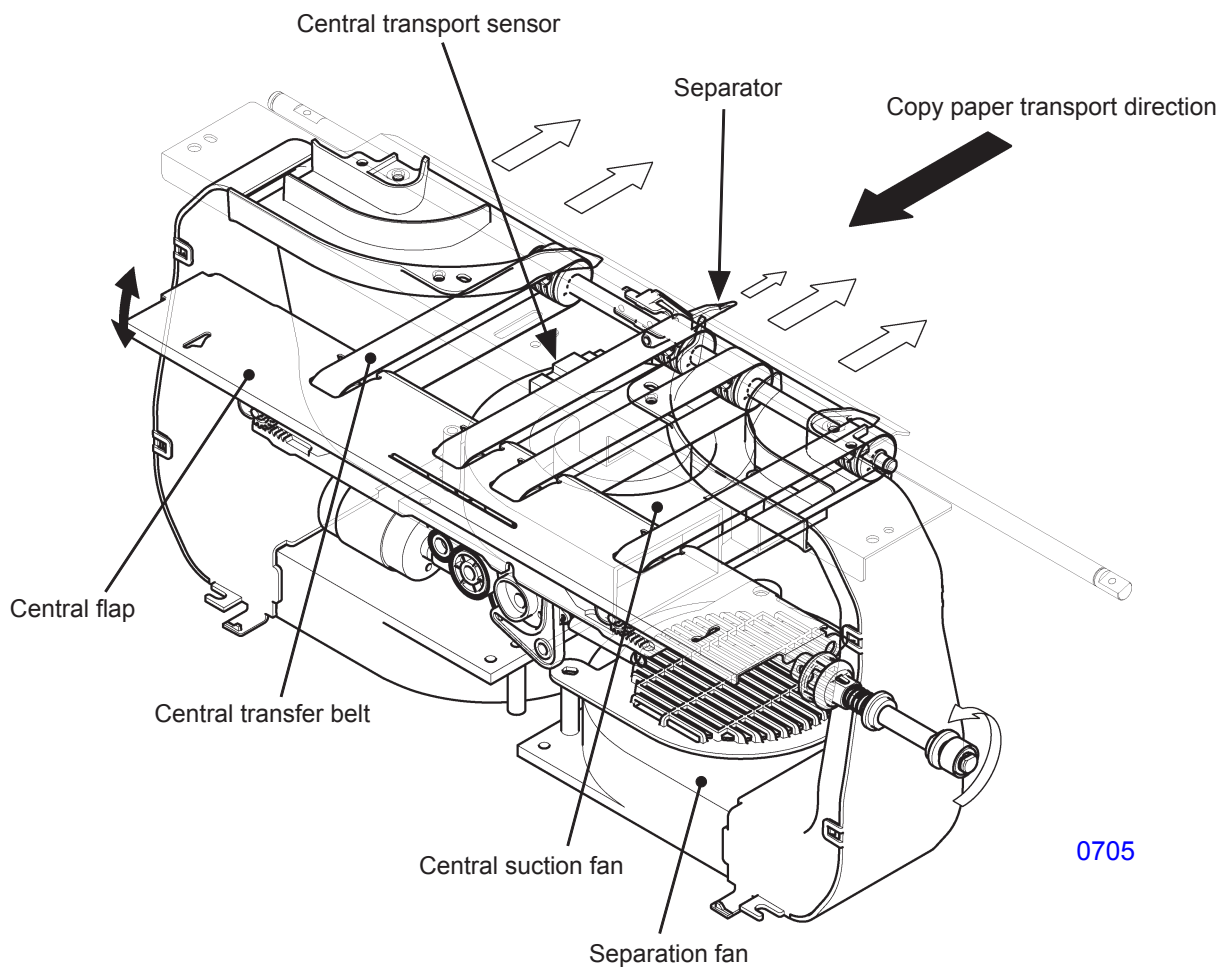
3. Center Transport Mechanism

The paper separated from the first print drum by the separator and the separation fan is sent to the second print drum by the rotating central transfer belts when printing is to be performed by the second print drum (in which case the central flap is raised). If no printing is performed by the second print drum, the paper is sent to the paper ejection section.

While the main motor operates, the central transfer belts rotate continuously.

The central suction fan is located under the central transfer belts and helps the paper adhere to the central transfer belts.

The central transport sensor confirms proper paper transport.



0705

4. Central Flap Mechanism

The central flap rises when the second print drum prints. If the second print drum is not used, the central flap descends.

<< Central flap rising operation >>

The central flap motor switches ON and rotates the main cam gear.

The cam on the main cam gear rotates the flap lever toward the front side.

The flap lever slides the flap rack toward the front side.

The two flap cam gears engaging with the flap rack rotate and lift the central flap.

The central flap motor stops when the central flap home position sensor changes from ON to OFF.

<< Central flap lowering operation >>

The central flap motor switches ON and rotates the main cam gear.

At the low section of the main cam gear, the flap lever is turned toward the rear side by the force of the flap spring.

The flap lever slides the flap rack toward the rear side.

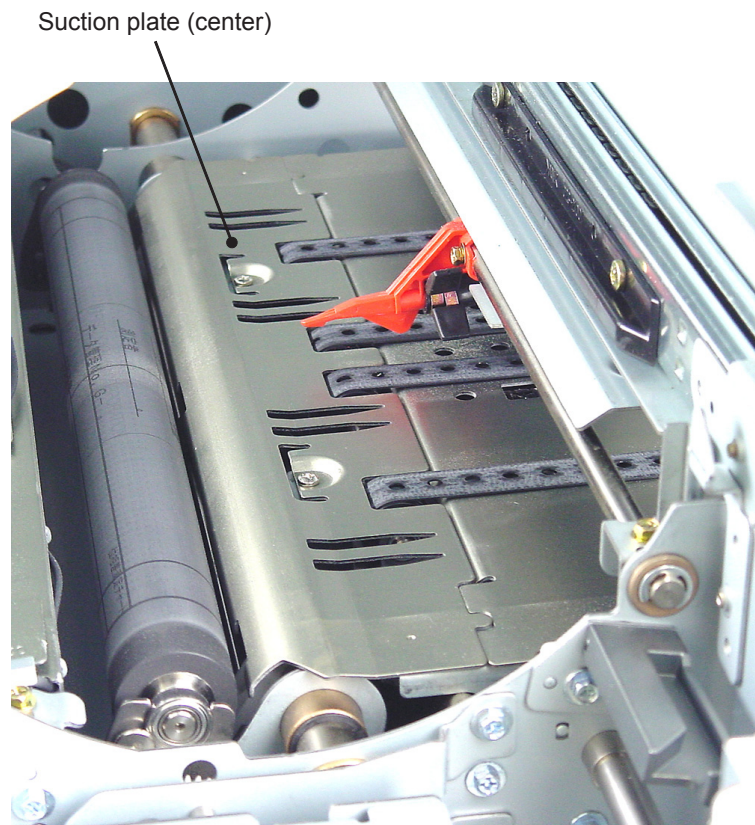
The two flap cam gears engaging with the flap rack rotate and lower the central flap.

The central flap motor stops when the central flap home position sensor switches from OFF to ON.

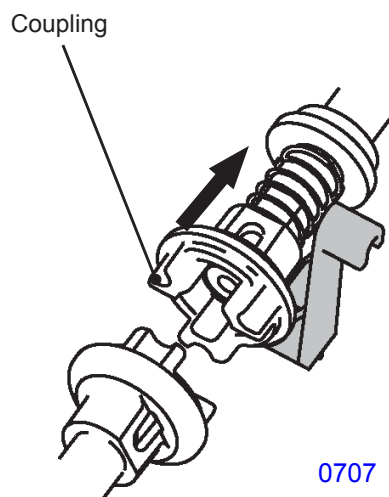
Disassembly

1. Removing the Central Transport Unit

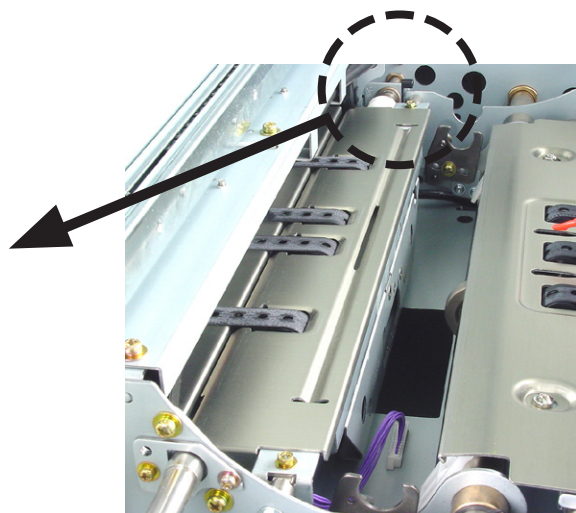
- (1) Pull out both the first and second print drums and switch off power.
- (2) Remove the pressure roller from the second print drum side.
- (3) Remove the two mounting screws (bind, M3 x 6, 2 pcs) and detach the suction plate (center).
- (4) Push the coupling of the main unit side toward the back until it clicks and locks into position and the connection disengages.



0706

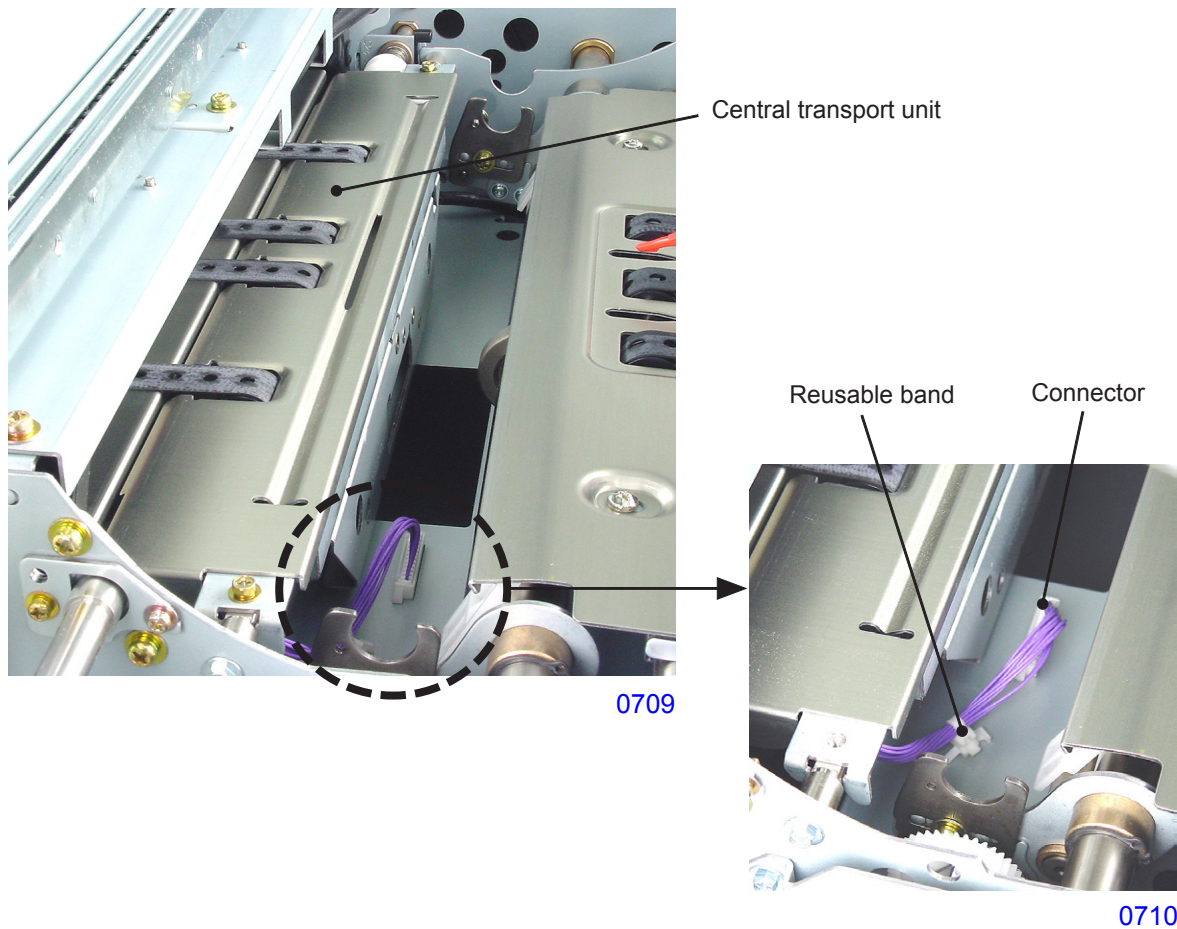


0707



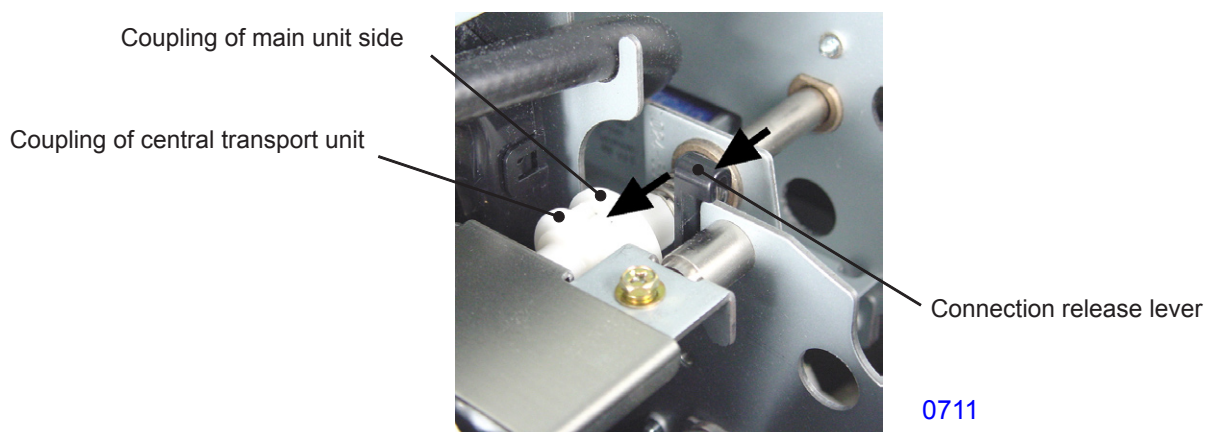
0708

- (5) Unplug the connector and remove the reusable band.
- (6) Remove the mounting screws (with double-washer cross-recessed hexagon head, M3 x 8, 2 pcs) and dismount the central transport unit from the second drum side next to the side plate by lifting it at an angle toward the paper ejection side.



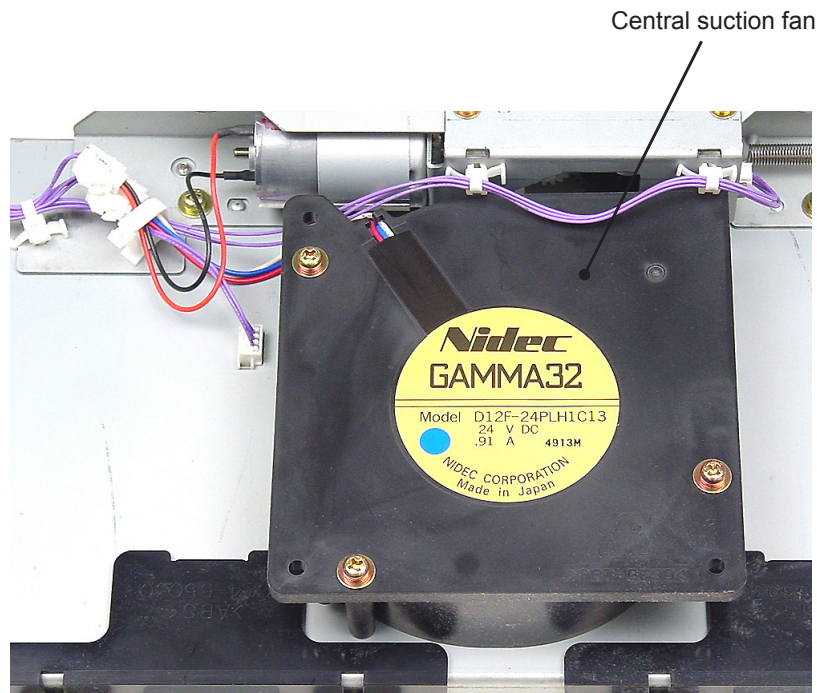
<< Precautions for installation >>

- Push the central transport unit toward the rear side to install.
- Pull the connection release lever toward the front to unlock the coupling of the main unit side, then connect the coupling of the main unit side to the coupling of the central transport unit.
- Press the suction plate (center) against the central transport plate to attach.

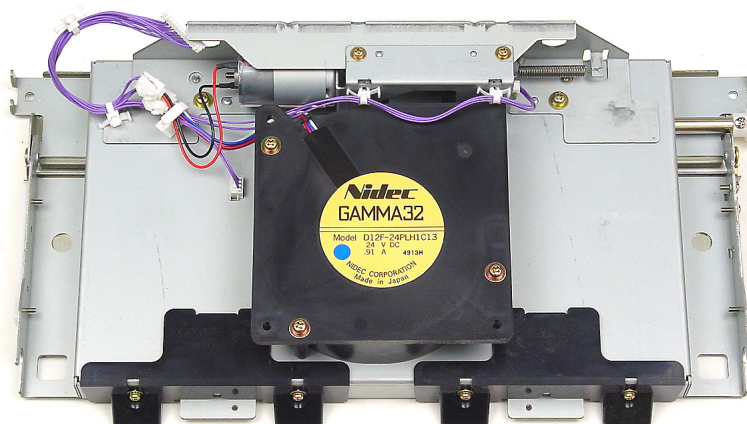


2. Removing the Central Suction Fan

- (1) Pull out both the first and second print drums, switch off power, and remove the central transport unit.
- (2) Remove the mounting screws (with double-washer, M4 x 40, 3 pcs), unplug the connector, and dismount the central suction fan.



0712



0713

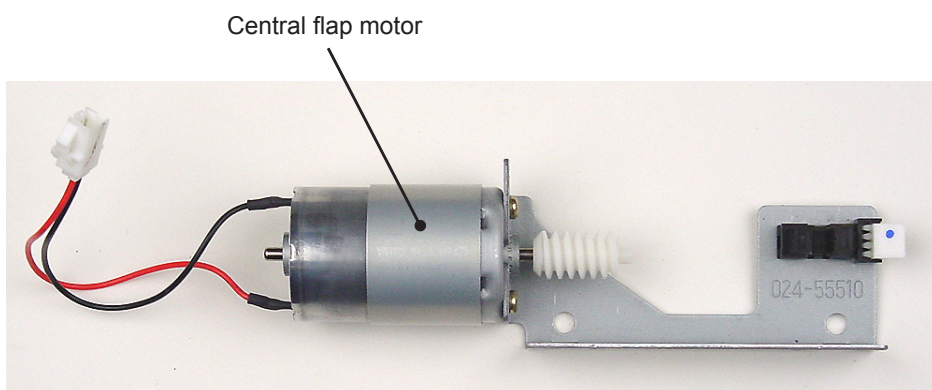
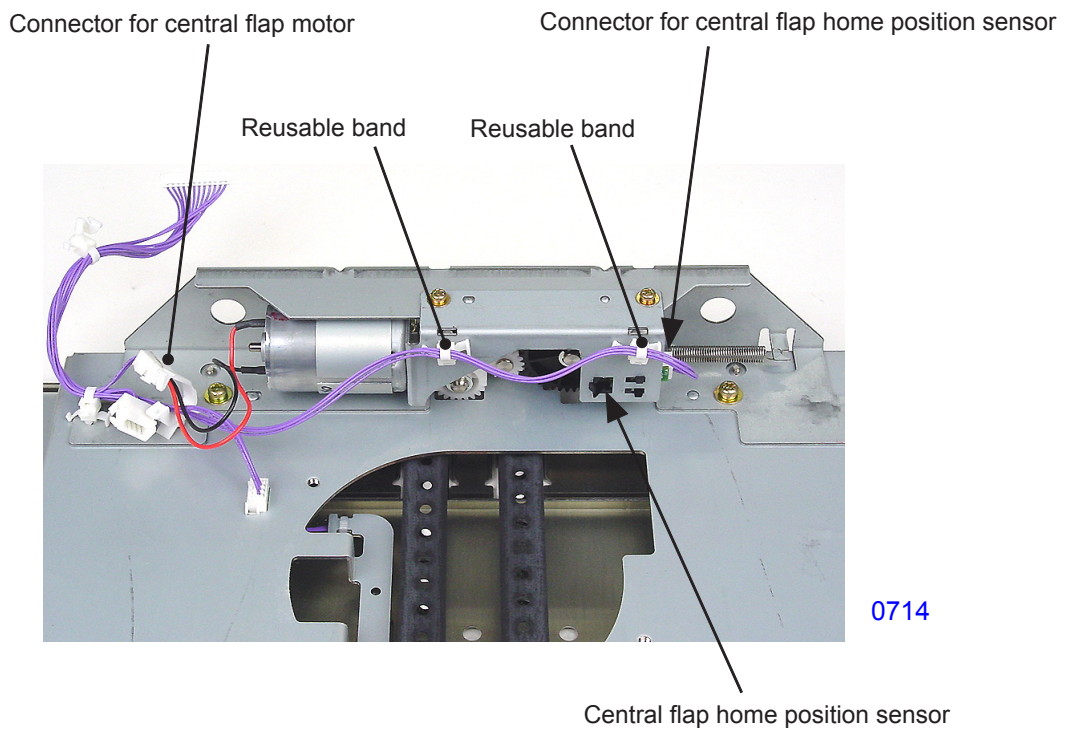
<< Central transport unit >>

3. Removing the Central Flap Motor Assembly

- (1) Pull out both the first and second print drums, switch off power, and remove the central transport unit.
- (2) Dismount the central suction fan.
- (3) Remove the mounting screws (with double-washer, M3 x 6, 2 pcs), unplug the connector for the central flap motor and the connector for the central flap home position sensor, remove the reusable band, and dismount the central flap motor assembly.

<< Precautions for installation >>

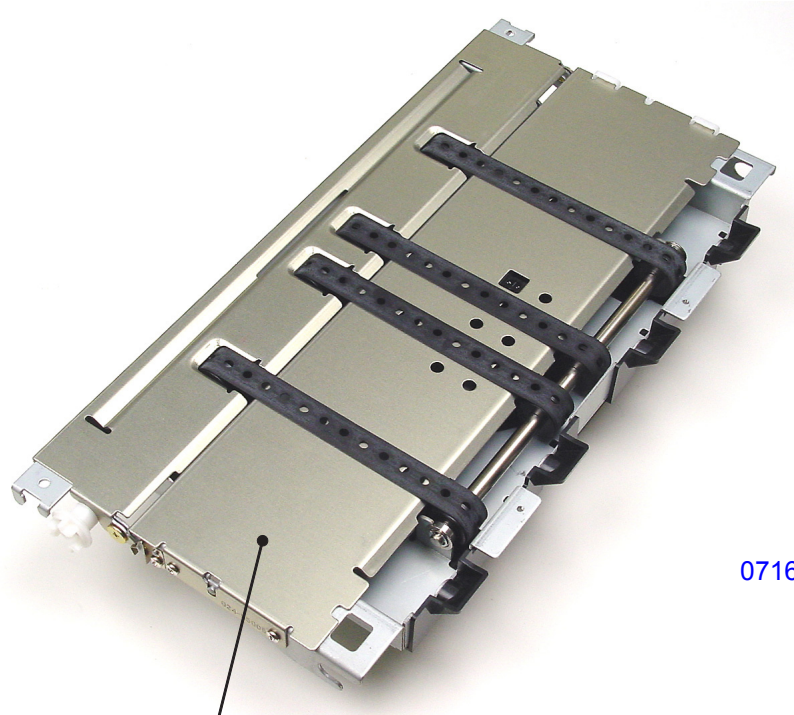
- After installing the central flap motor assembly, confirm that the central flap is not in a raised position.



<< Central flap motor assembly >>

4. Removing the Central Transport Sensor

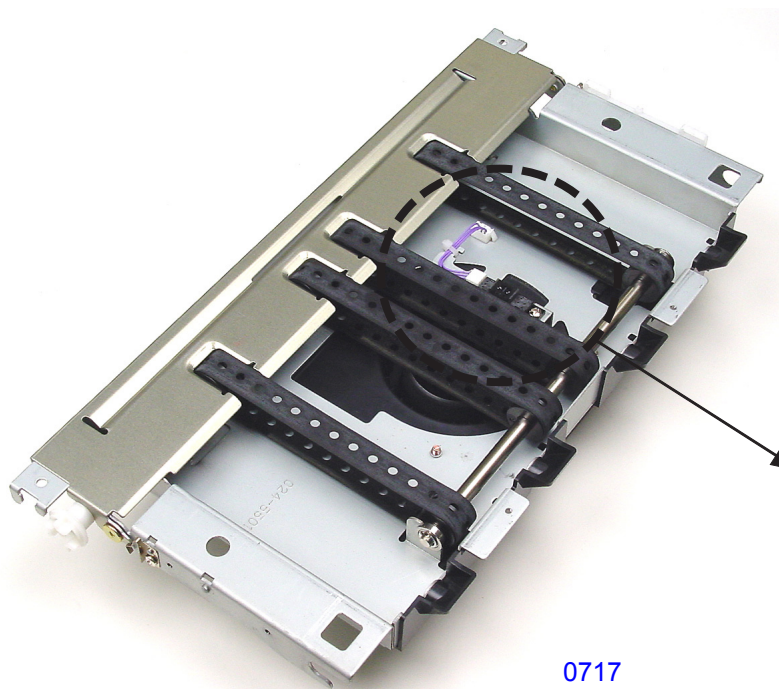
- (1) Pull out both the first and second print drums, switch off power, and remove the central transport unit.
- (2) Remove the mounting screws (bind, M3 x 8, 2 pcs) and slide the central transport plate toward the rear side to remove.
- (3) Remove the mounting screw (bind, M3 x 8, 1 pc), unplug the connector, and dismount the central transport sensor.



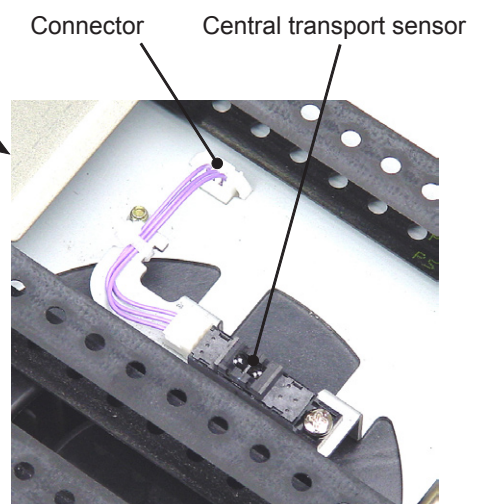
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Central transport plate

<< Central transport unit >>



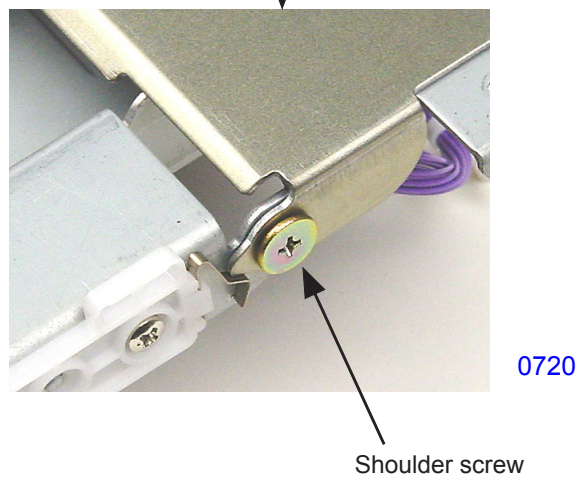
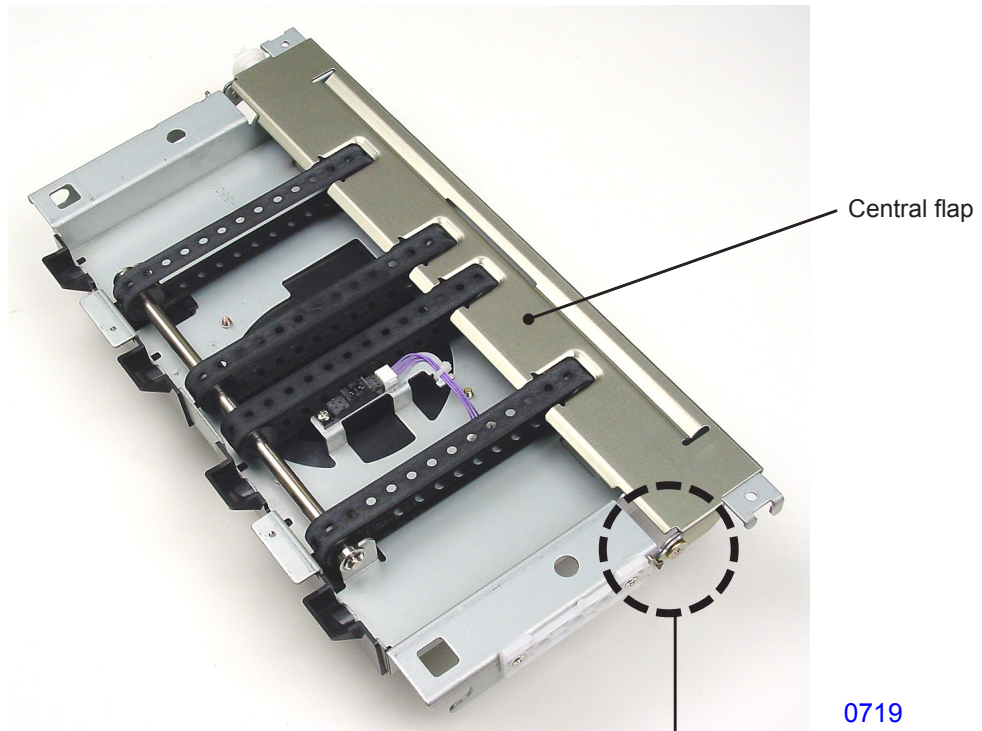
0717



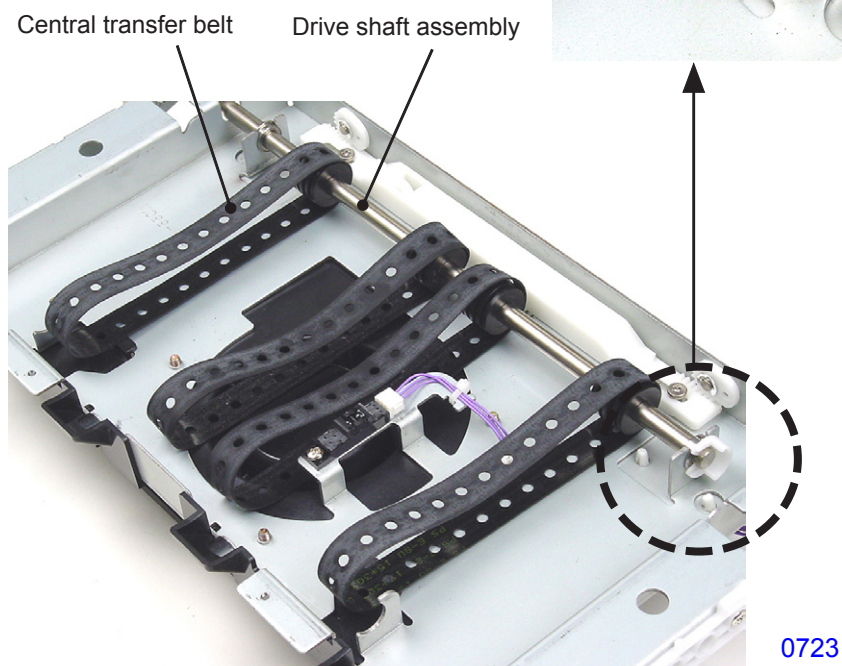
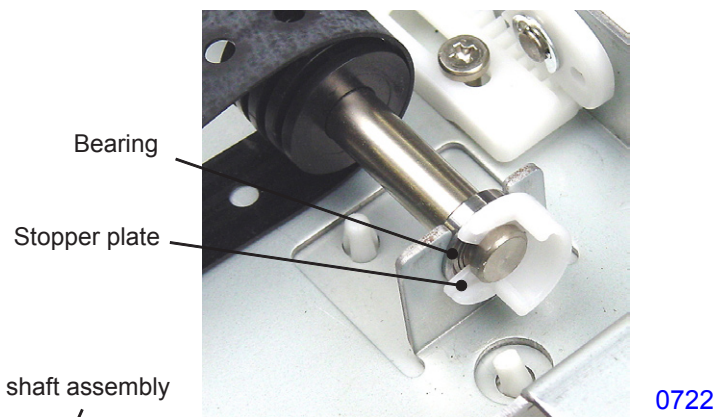
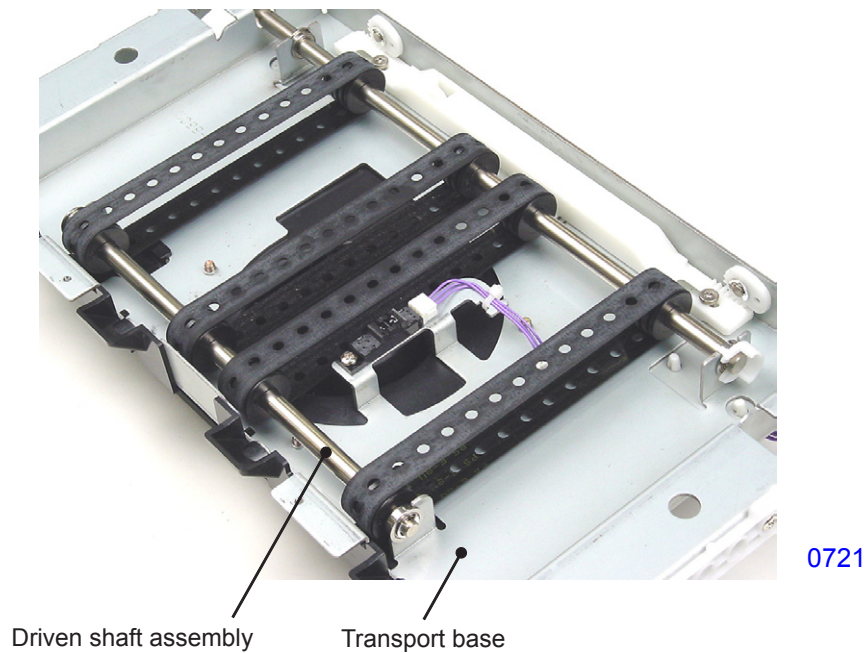
0718

5. Removing the Central Transfer Belts

- (1) Pull out both the first and second print drums, switch off power, and remove the central transport unit.
- (2) Remove the central transport plate.
- (3) Remove the shoulder screws (one each) from the front and rear sides and dismount the central flap.

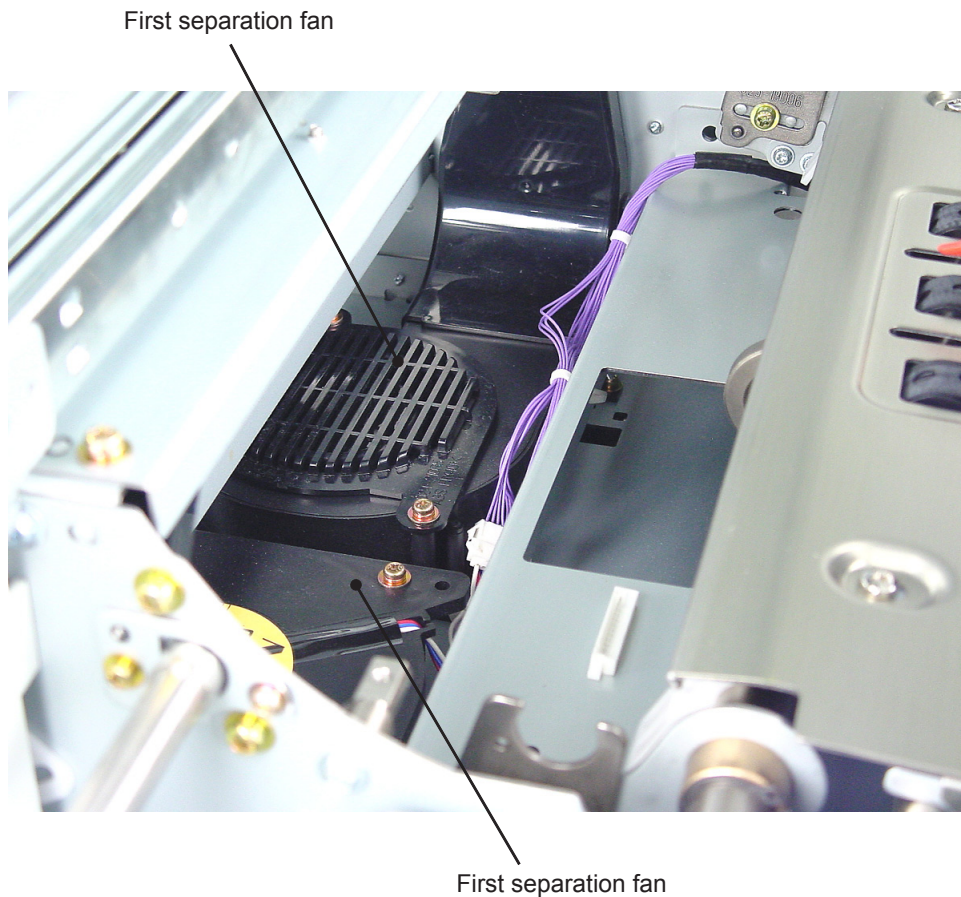


- (4) Disengage the driven shaft assembly from the hook section of the transport base and remove.
- (5) Remove the stopper plate and bearing from the front side of the drive shaft assembly, slide the drive shaft assembly toward the rear side, and remove the central transfer belts.



6. Removing the First Separation Fans

- (1) Pull out both the first and second print drums, switch off power, and remove the central transport unit.
 - (2) Remove the mounting screws (with double-washer, M4 x 40, 3 pcs each), unplug the connector, and dismount the two first separation fans.
- * Remove the rear-side separation fan together with the fan cover.

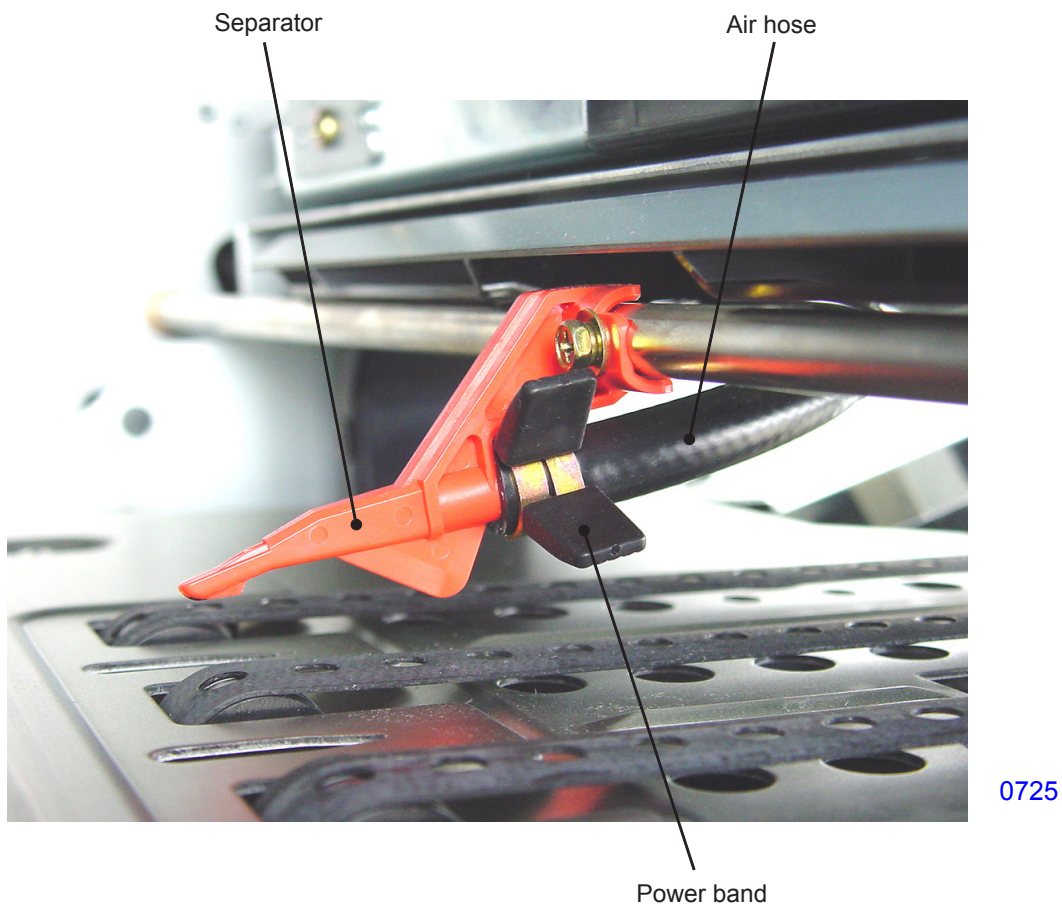


<< Precaution in installation >>

- When installing the separation fans, insert the air outlet for each separation fan into the opening of the duct assembly before securing the fan into position.

7. Removing the Separator (Same for First and Second Print Drum Sides)

- (1) Pull out the print drum on the side from which the separator is to be removed. Switch off power.
- (2) Move the power band out of the way and disconnect the air hose from the separator.
- (3) Remove the mounting screws (with double-washer cross-recessed hexagon head, M3 x 8, 2 pcs) and dismount the separator.

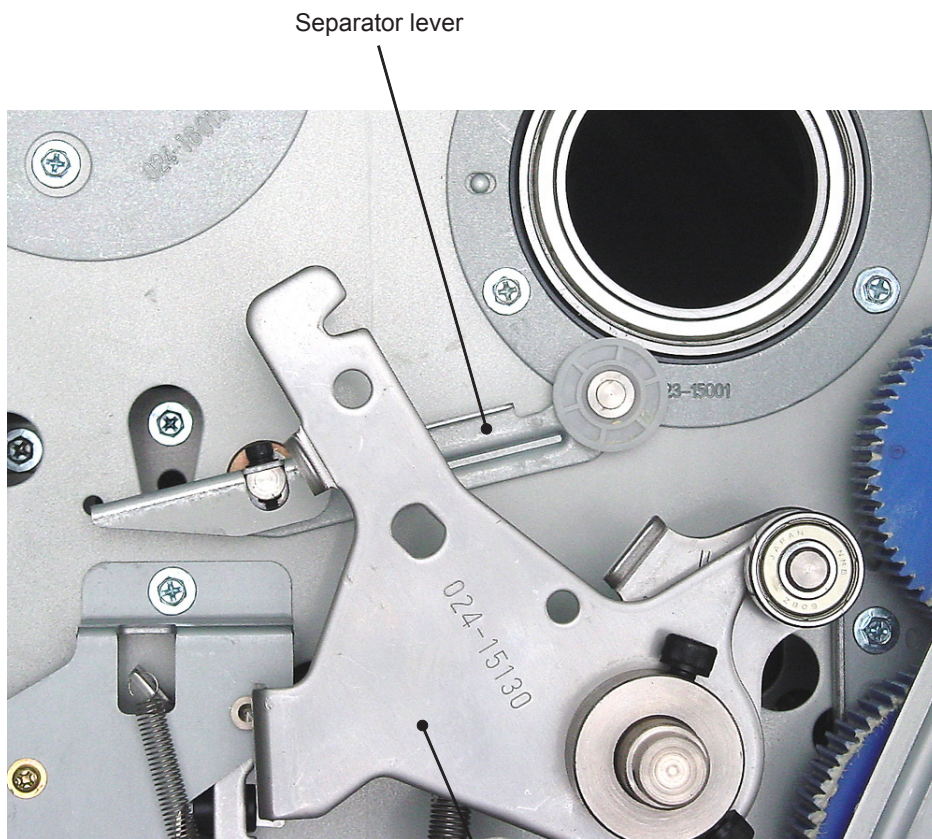


<< Precaution in installation >>

- Install the power band so that the grips are positioned on the front side and angled upward, as shown in the photo.

8. Removing the First Separator Lever

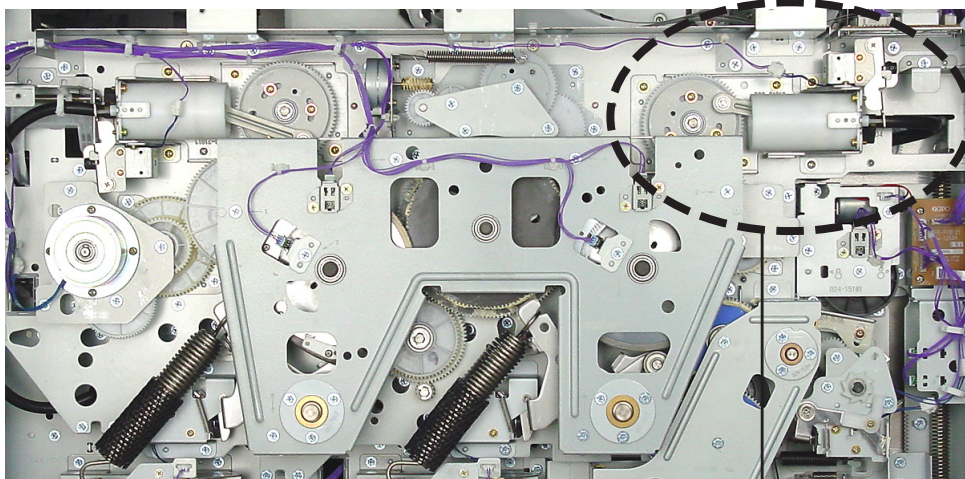
- (1) Remove the vertical print position main unit. (See the section on the main drive unit.)
- (2) Remove the mounting screw (double-washer cap screw, M3 x 10, 1 pc), and dismount the separator lever.



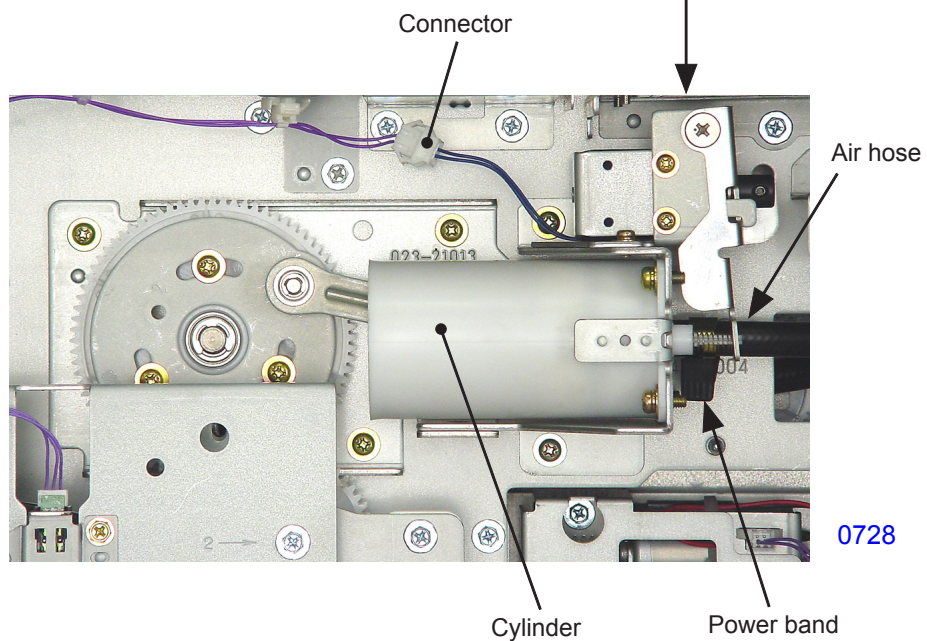
0726

9. Removing the First Separation Pump Assembly

- (1) Switch off power, remove the cover (rear left) and the cover (rear right), and open the power supply/ system PCB bracket and the SH PCB bracket.
- (2) Unplug the connector, remove the mounting screws (with double-washer, M4 x 8, 5 pcs), and move the power band out of the way. Disconnect the air hose from the cylinder and dismount the first separation pump assembly.



0727

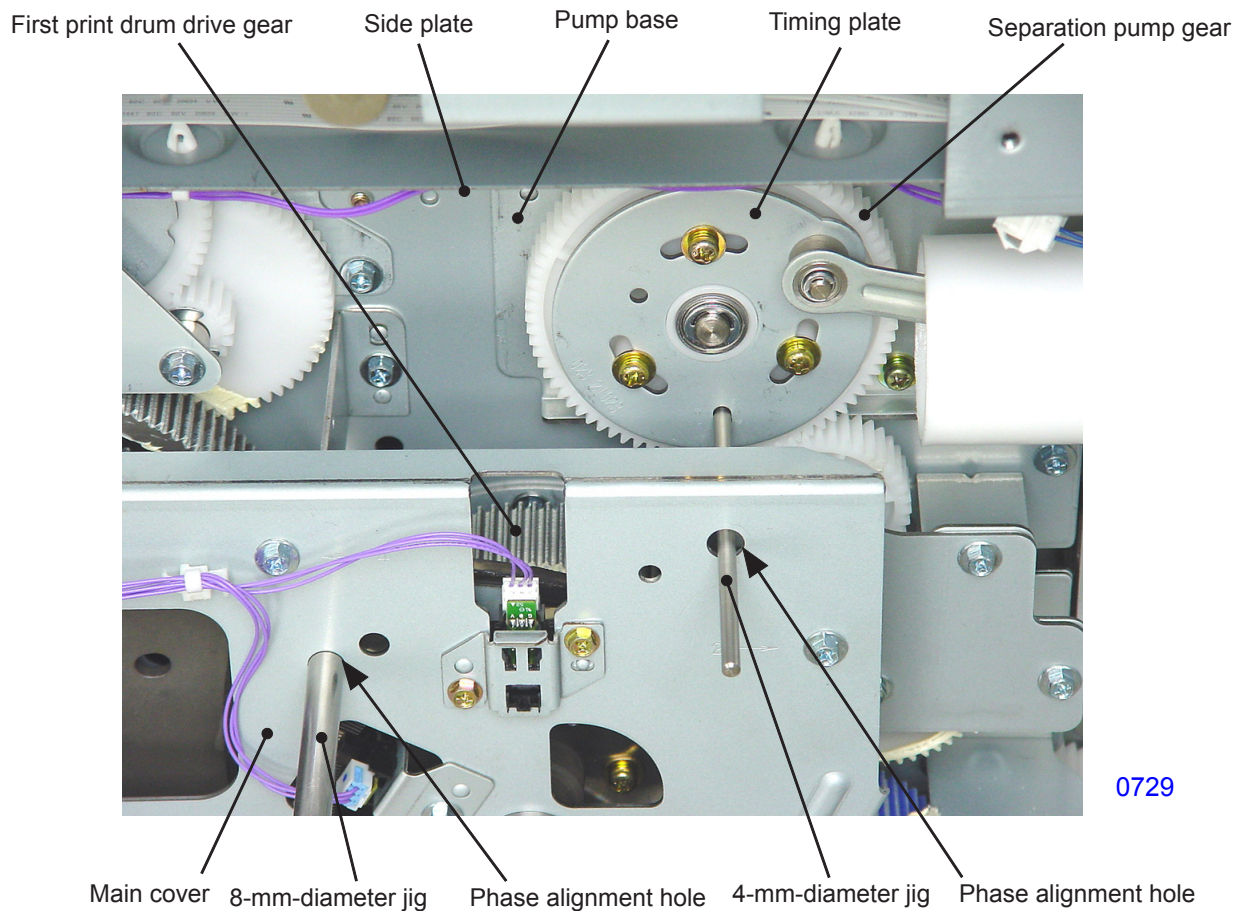


0728

<< Precautions in installation >>

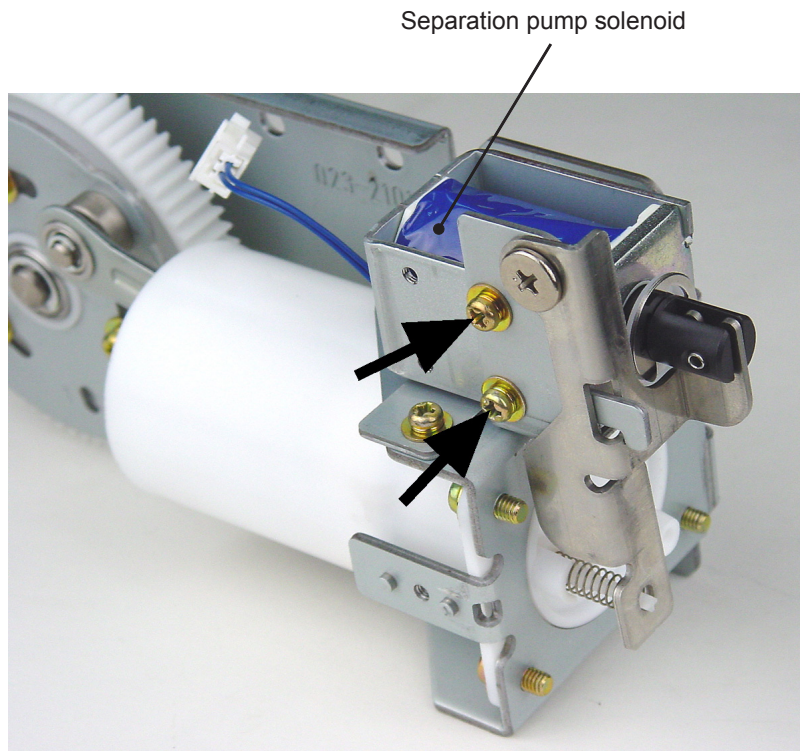
Be sure to align phases between the first print drum drive gear and the separation pump gear.

- (1) Insert the 8-mm-diameter jig into the phase alignment holes in the main cover, first pressure cam, and side plate.
- (2) Make sure that the hole in the timing plate with the <1> mark is positioned at the location shown in the photo and that the 4-mm-diameter jig can be inserted through the hole in the main cover into the phase alignment holes of the timing plate and pump base when engaging the gear teeth during installation.



10. Removing the Separation Pump Solenoid

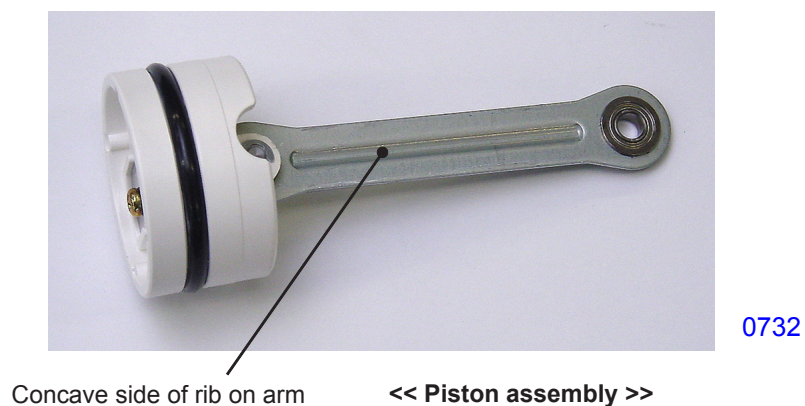
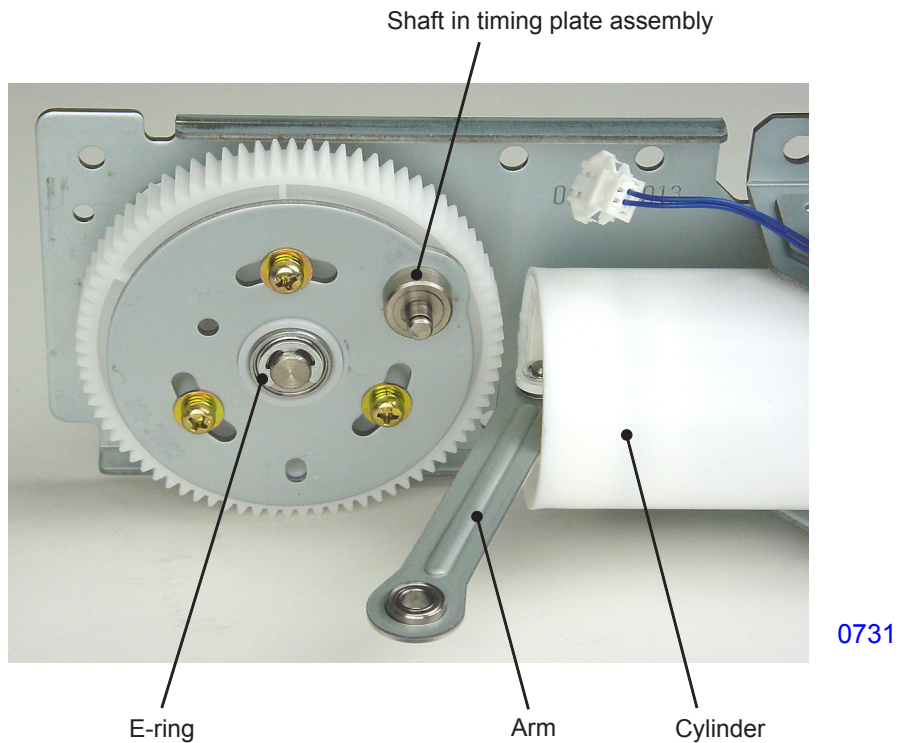
- (1) Remove the separation pump assembly.
- (2) Remove the mounting screws (with double-washer, M3 x 6, 2 pcs) and dismount the separation pump solenoid.



<< Separation pump assembly >>

11. Removing the Separator Pump O-ring, Piston, and Cylinder

- (1) Remove the separation pump assembly.
- (2) Remove the E-ring and pull out the arm from the shaft in the timing plate assembly.
- (3) Turn the piston assembly 90°, pull out to a location near the cylinder opening, and move the arm out of the way.
- (4) Remove the E-ring and dismount the separation pump gear assembly.
- (5) Pull the piston assembly from the cylinder.



<< Precautions in installation >>

- When installing the piston assembly into the cylinder, make sure that the concave side of the rib on the arm is positioned toward the front side.

Removing the O-ring

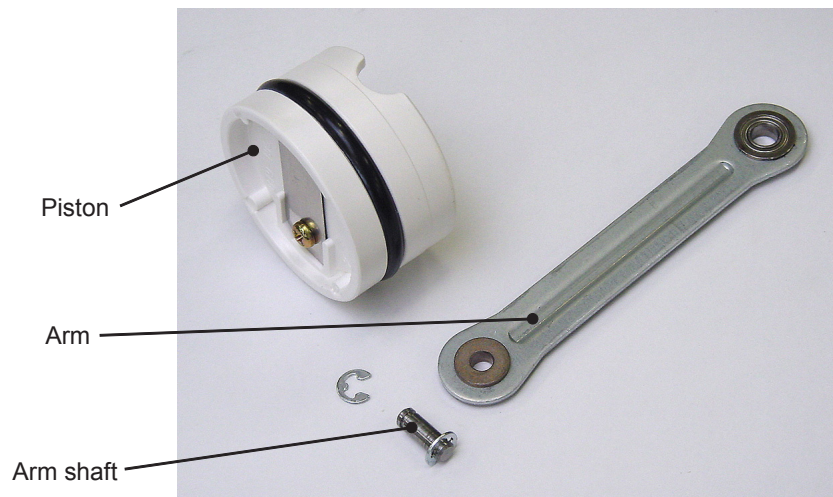
- (6) Remove the O-ring from the piston assembly.



0733

Removing the piston

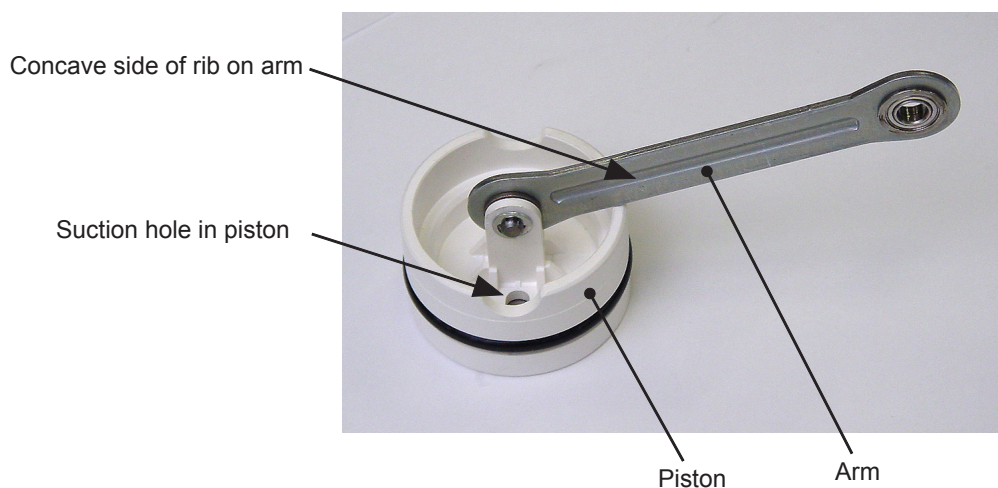
- (6) Detach the E-ring, pull out the arm shaft and remove the piston.



0734

<< Precautions in installation >>

- Apply white grease during installation.
- Make sure that the concave side (side on which bearing metal and bearing are installed) of the rib on the arm faces the suction hole side of the piston.

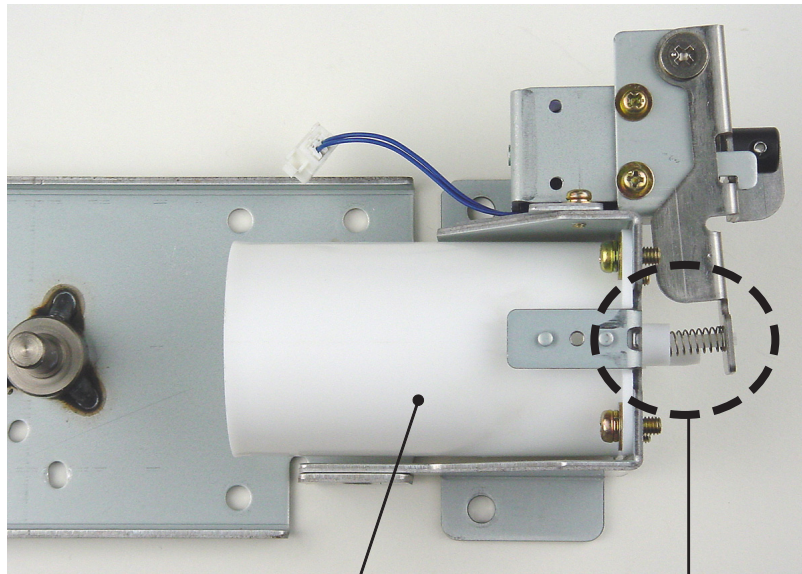


0735

Removing the cylinder

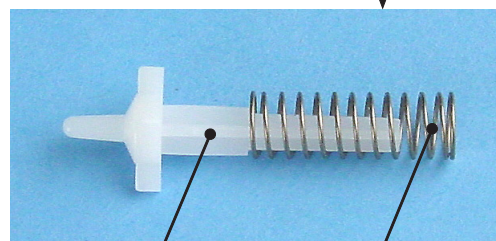
(6) Remove the mounting screws (with double-washer, M4 x 8, 4 pcs) and dismount the cylinder.

* Since the control valve and spring come loose at the same time, be careful to avoid losing them.



0736

Cylinder



0737

Control valve

Spring

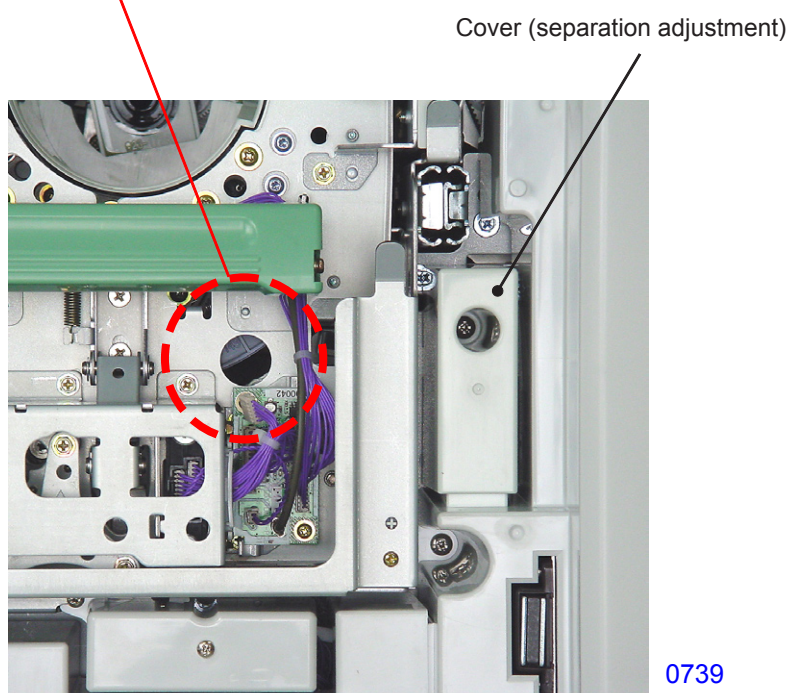
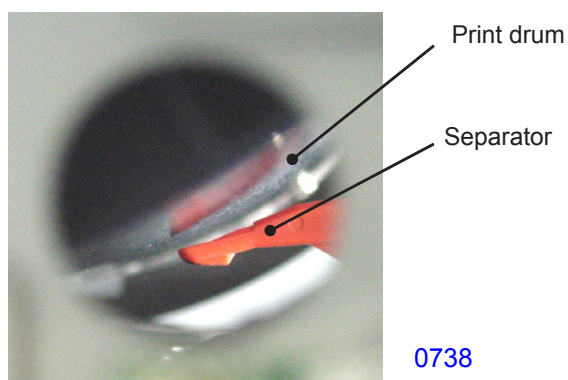
Adjustment

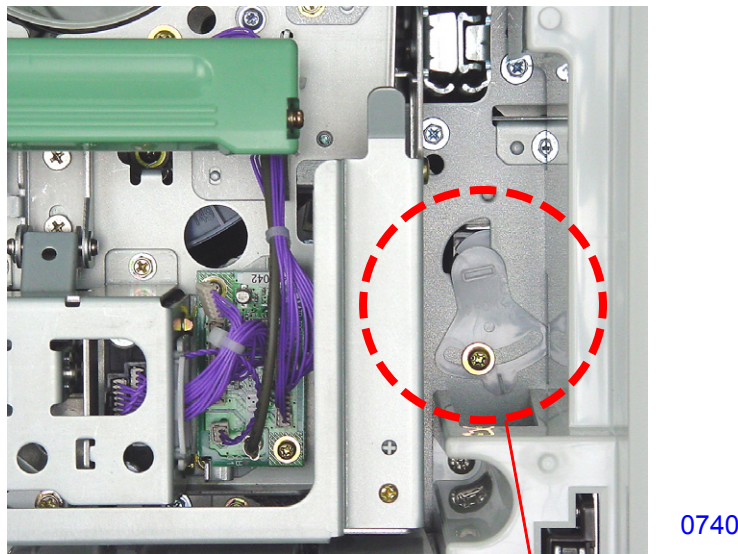
1. Separator Position Adjustment

- * To adjust the separator on the first print drum side, first pull out the second print drum first.
- * Set the separator to position B for checks and adjustments.

Checks and adjustment procedures

- (1) Pull the print drum from the side to be checked and adjusted, remove the front frame cover, and reinstall the print drum in the main unit. Switch off power.
- (2) Look through the hole in the print drum front frame and confirm that the gap between the print drum and the separator tip is $1\text{ mm} \pm 0.5\text{ mm}$.
- (3) If the gap deviates from the standard value, remove the mounting screw (bind, M4 x 8, 1 pc), detach the cover (separator adjustment) from the side to be adjusted, and loosen the stopper retaining screw.
- (4) While looking through the hole in the print drum front frame, adjust the gap between the print drum and the separator tip to the standard value, then tighten the stopper retaining screw.





Possible problems when incorrectly adjusted

- Contact between the tip of the separator and the print drum surface will scratch the surface of the master, resulting in a black streak at the center of printed pages.
- If the tip of the separator is too far from the print drum surface, the separator will fail to separate the paper from the print drum, resulting in paper jams on the print drum.

MEMO

CHAPTER 8: PAPER EJECTION SECTION

Contents

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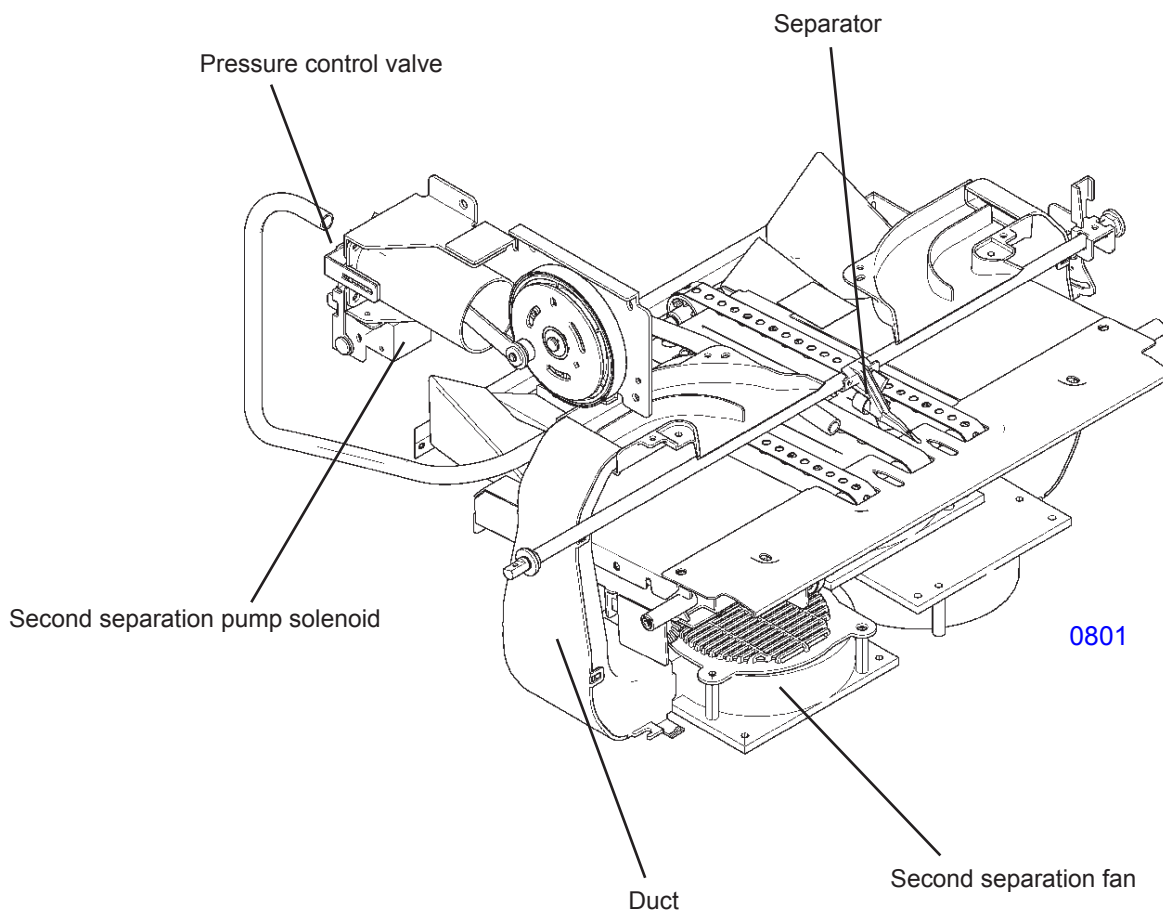
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Mechanism

1. Paper Separation Mechanism (Same as on the First Print Drum Side)

When the second print drum is used for printing, the second separation pump solenoid switches ON at the start of a print job and closes the pressure control valve to allow air to escape from the separator. The second separation fan also switches ON. The second separation pump solenoid and the second separation fan remain ON during printing, turning OFF when the print job is completed.

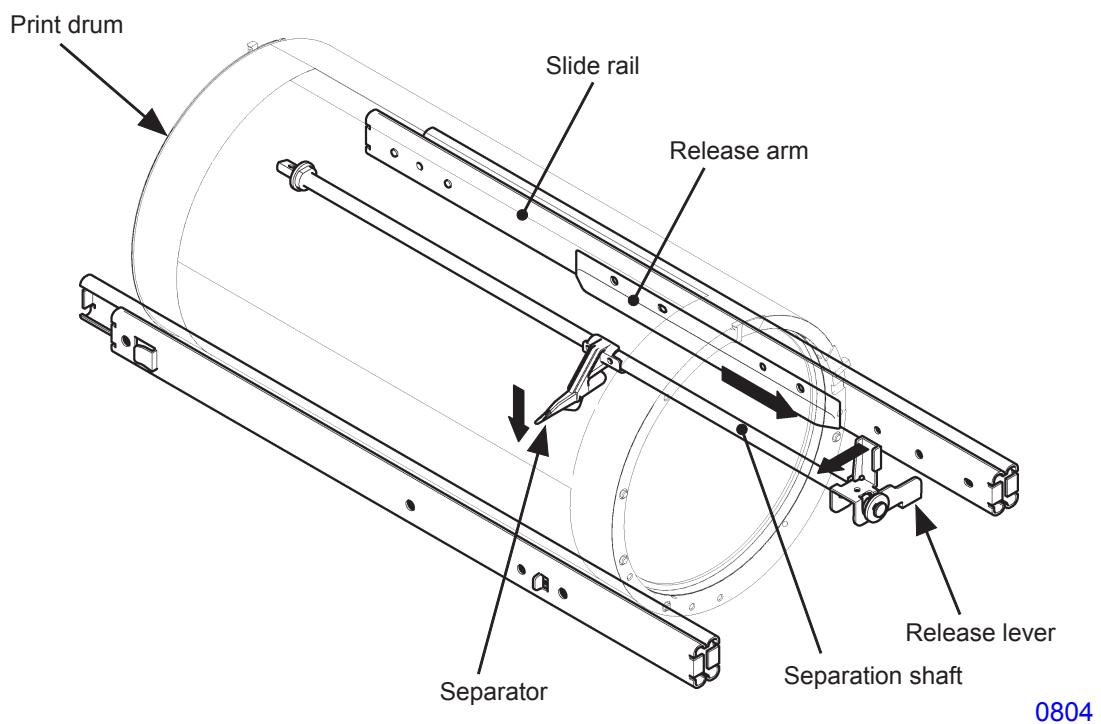
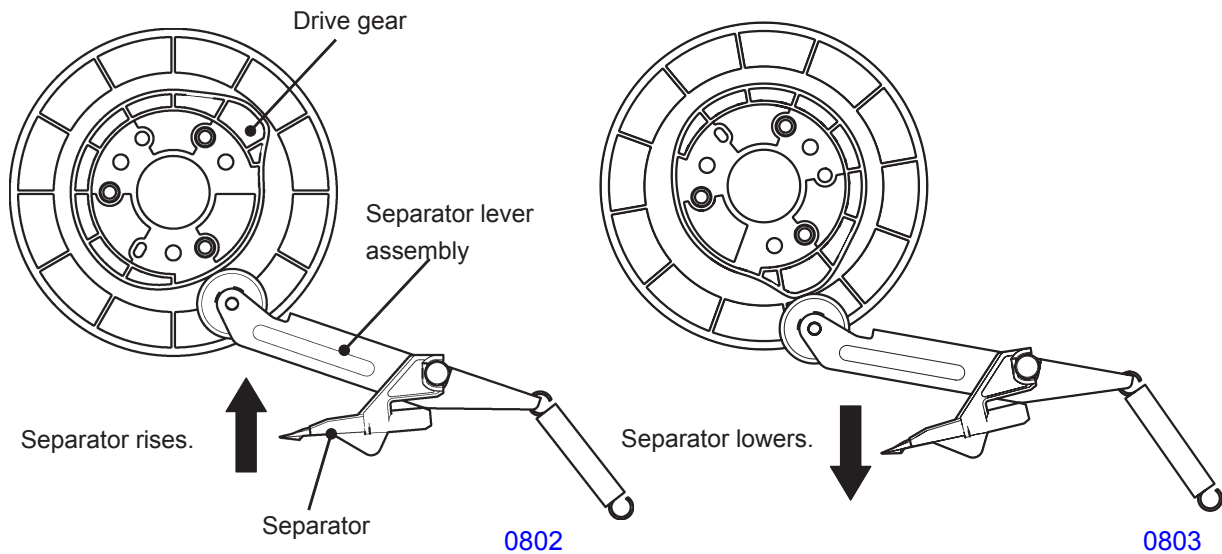
The printed paper is separated from the print drum by the separator. Air is ejected from the separator directed from the separation fan through the duct and out from the nozzle.



2. Separator Mechanism (Same as on the First Print Drum Side)

When paper is separated from the print drum, the separator is positioned close to the print drum. However, as the print drum rotates and the clamp plate base of the print drum approaches the separator, the cam on the back side of the drive gear pushes the separator lever assembly, turning the separation shaft and moving the separator away from the print drum.

Pulling out the print drum causes the release arm attached to the slide rail to push the release lever, turning the separation shaft and moving the separator away from the print drum.



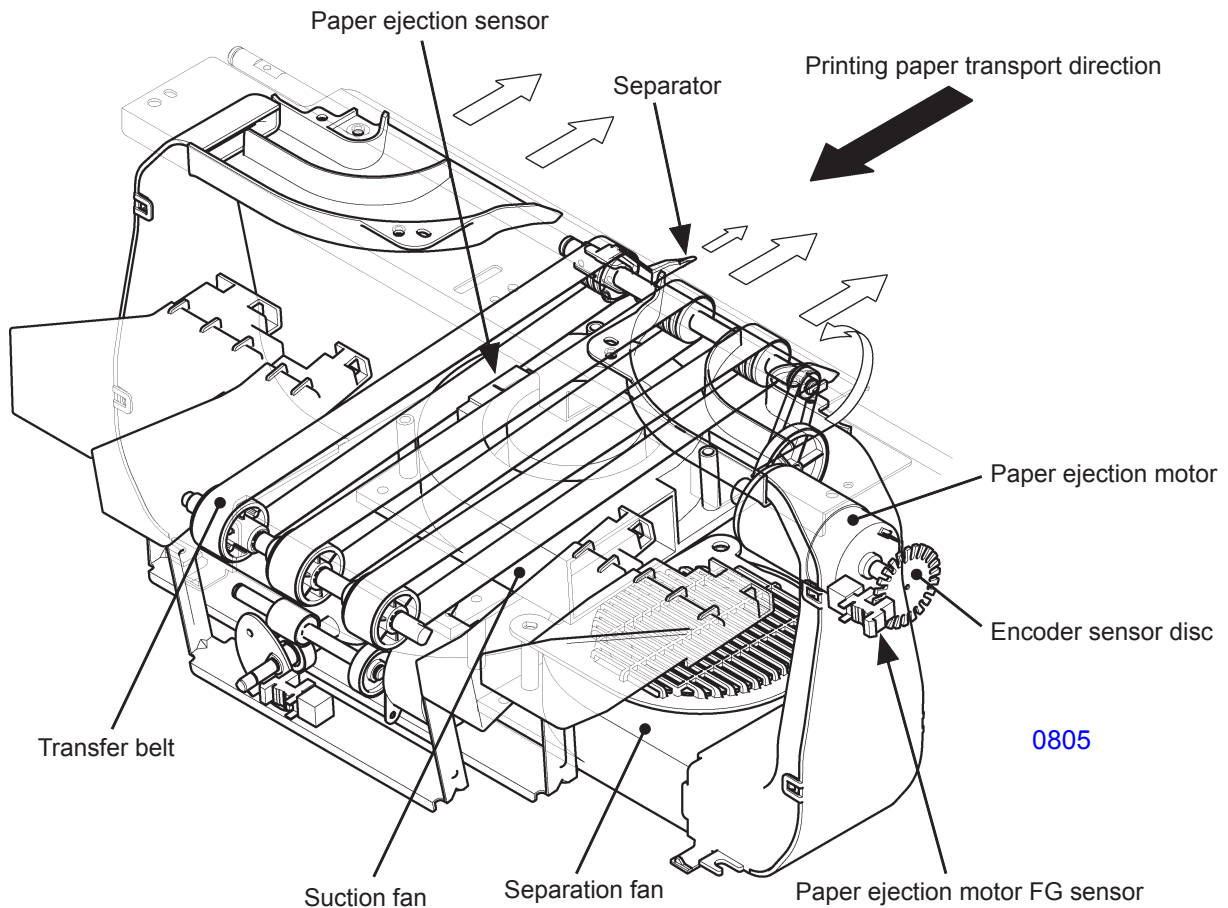
3. Paper Transport Mechanism

Paper separated from the print drum by the separator and the separation fan is transported to the paper receiving tray by the rotation of the transfer belts.

The transfer belts rotate when the paper ejection motor switches ON.

The suction fan located under the transfer belts helps the paper adhere to the transfer belts. The paper ejection sensor confirms proper paper transport.

The paper ejection motor FG sensor and the encoder sensor disc check the paper ejection motor speed to ensure that the transfer belt speed exceeds the peripheral speed of the print drum at each drum rotation speed. This ensures smooth ejection of paper from the print drum.



4. Paper Ejection Wing Mechanism

The paper ejection wings on the left and right sides of the paper ejection unit are set to the positions appropriate for the type of copy paper used.

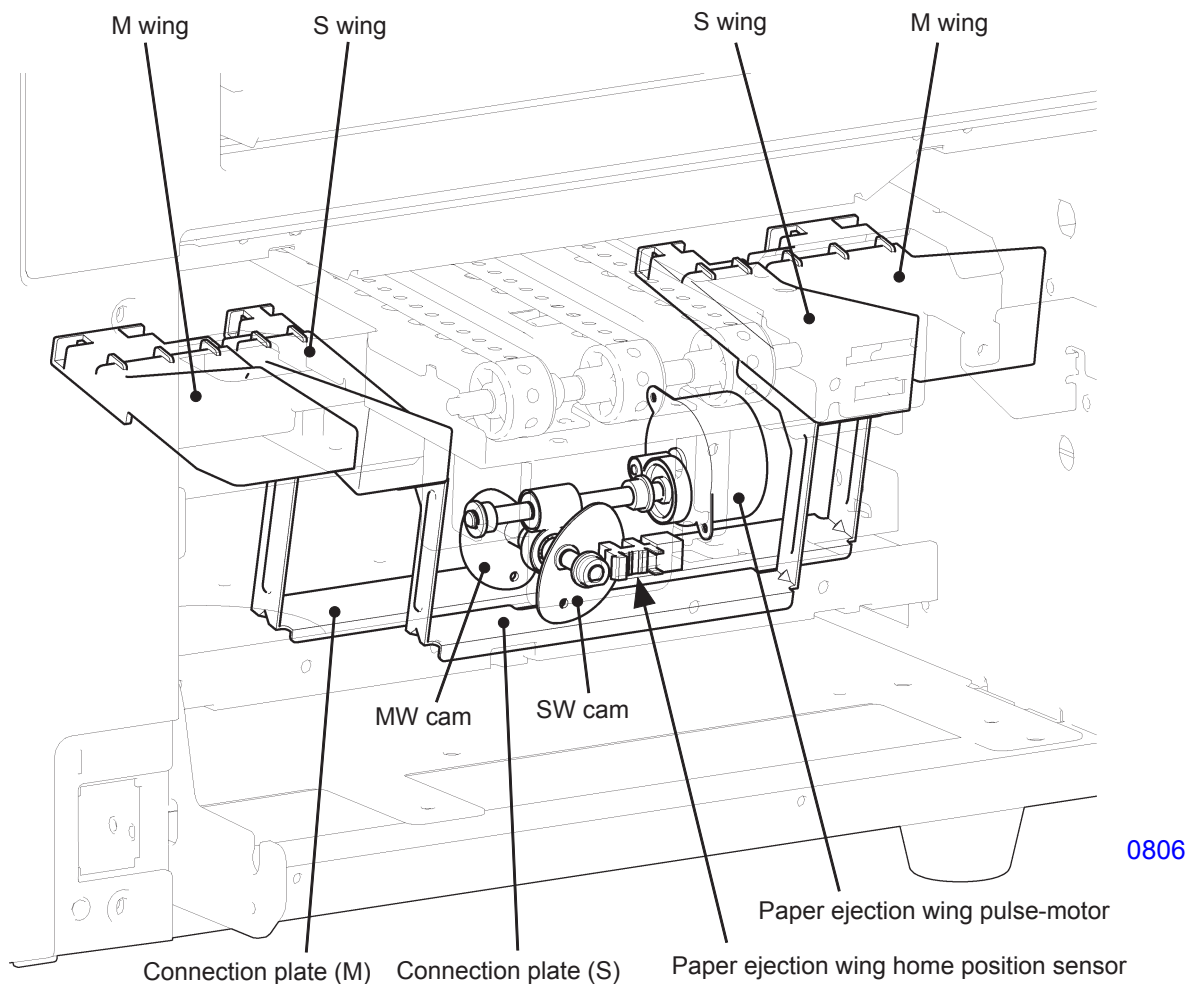
The paper ejection wing position settings are set by the rotation of the MW cam and SW cam driven by the paper ejection wing pulse motor.

The MW cam moves the connection plate (M) along the vertical axis, lifting or lowering the M wings on the left and right sides.

The SW cam moves the connection plate (S) along the vertical axis, lifting or lowering the S wings on the left and right sides.

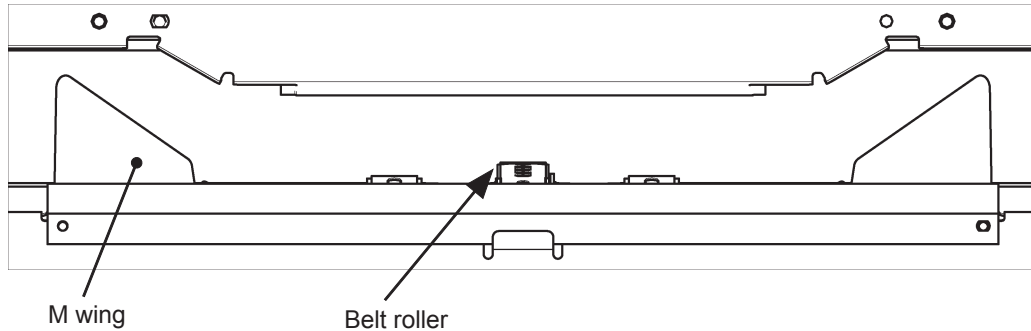
The paper ejection wing home position sensor checks the home positions of the paper ejection wings.

There are four paper ejection wing positions ((1) to (4)), as described on the next page. The correct position is set according to the paper size (paper width only) and the paper feed pressure lever (normal/card) setting. The position setting is not affected by other settings such as the custom paper setting.



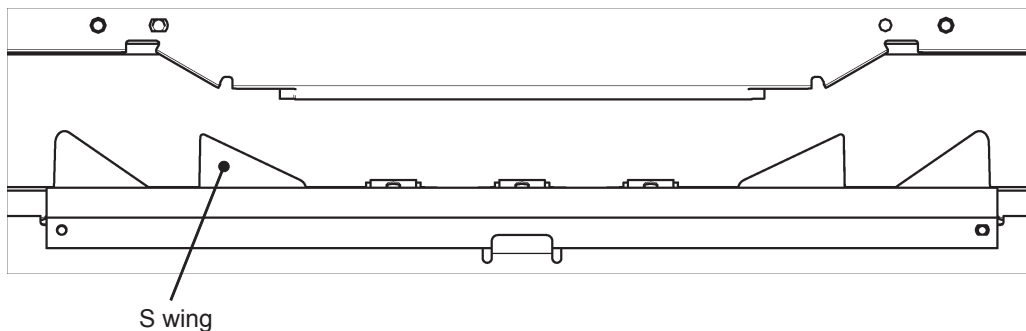
Paper ejection wing position setting

- (1) The M wings and the belt roller are in their raised positions, while the S wings are in their lowered positions. This position setting is for normal paper with paper widths of B4 or larger. The paper feed pressure lever is at the <Normal> position, and the paper width potentiometer detects a width of B4 or larger (equivalent to 1434 pulses).



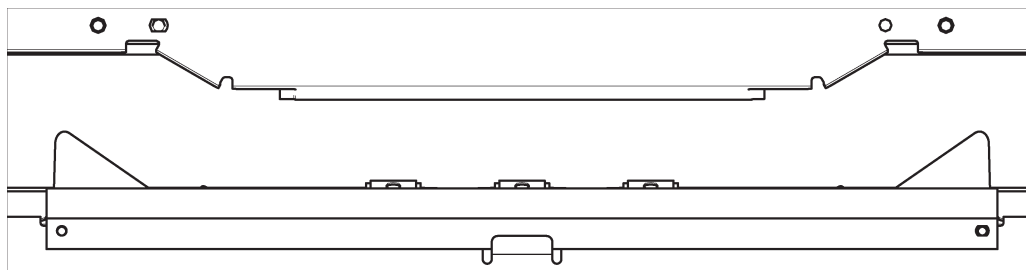
0807

- (2) The M wings and the belt roller are in their lowered positions, while the S wings are in their raised positions. This position setting is for normal paper with paper widths of B4 or smaller. The paper feed pressure lever is at the <Normal> position, and the paper width potentiometer detects paper widths of B4 or smaller (equivalent to 717 pulses).



0808

- (3) The M wings, the belt roller, and the S wings are in their lowered positions. This position setting is suitable for card stock of all paper sizes. The paper feed pressure lever is at the <CARD> position. The paper width potentiometer detection has no effect (home position: equivalent to 0 pulse).



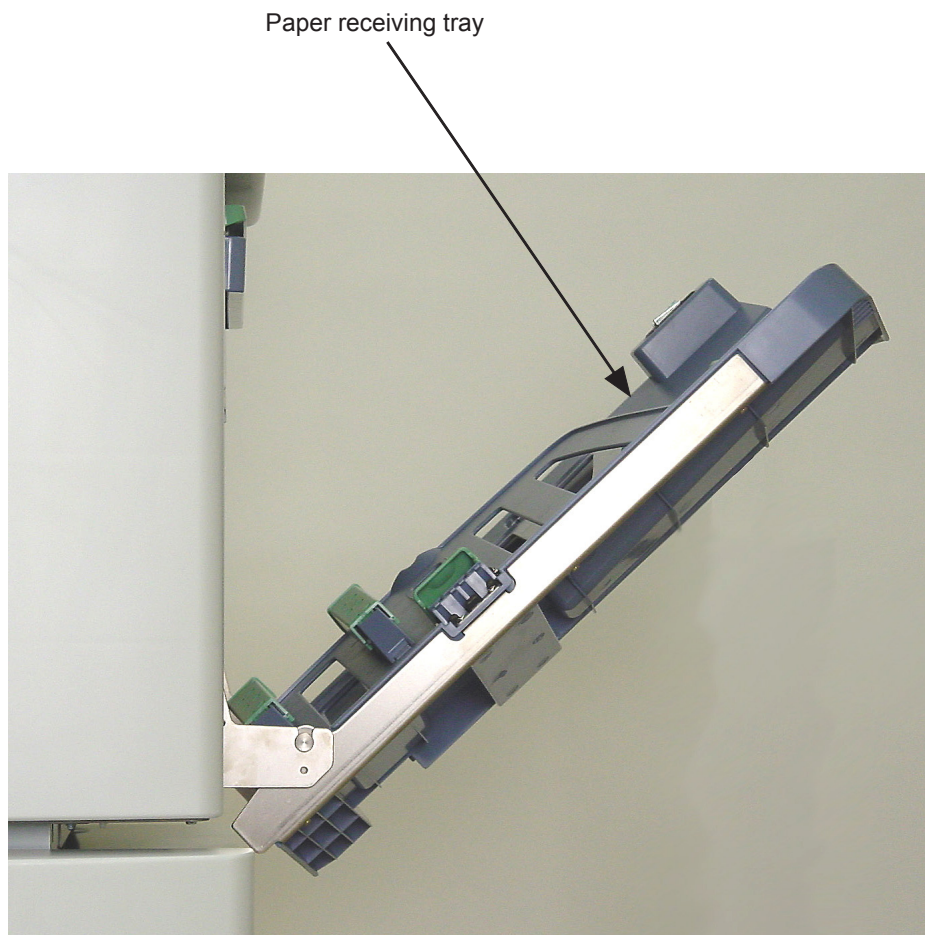
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- (4) Test Mode No. 780 (Paper Ejection Wing Target Position) is used by a service engineer to set the position for custom paper. If the setting is changed from the default value, the operation panel displays <Custom paper ejection wing position>. This position can be selected by users.

Disassembly

1. Removing the Paper Receiving Tray

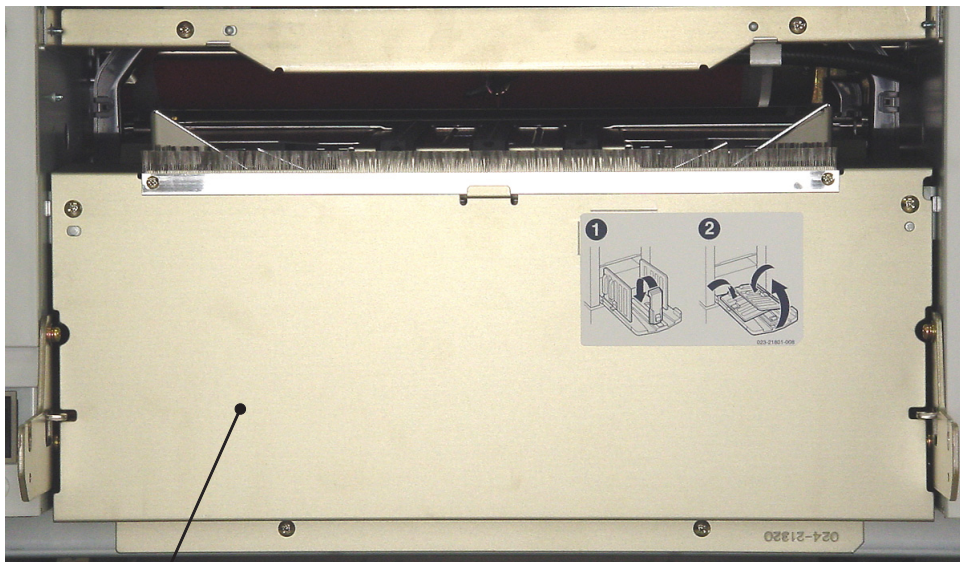
- (1) Open the paper receiving tray to an angle of 45°, then lift it from that position to remove.



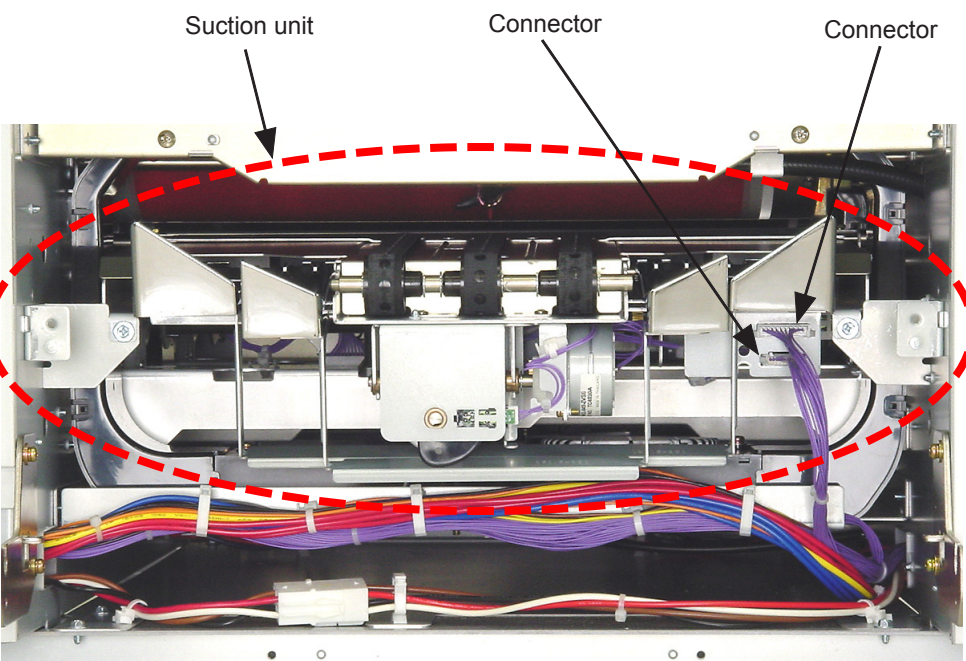
0810

2. Removing the Suction Unit

- (1) Switch off power and remove the paper receiving tray.
- (2) Remove the paper ejection cover. (bind, M4 x 8, 4 pcs)
- (3) Unplug the connectors (2 locations), remove the mounting screws (RS tight with round tip, M4 x 8, 2 pcs), and lift the suction unit and pull forward to remove it.



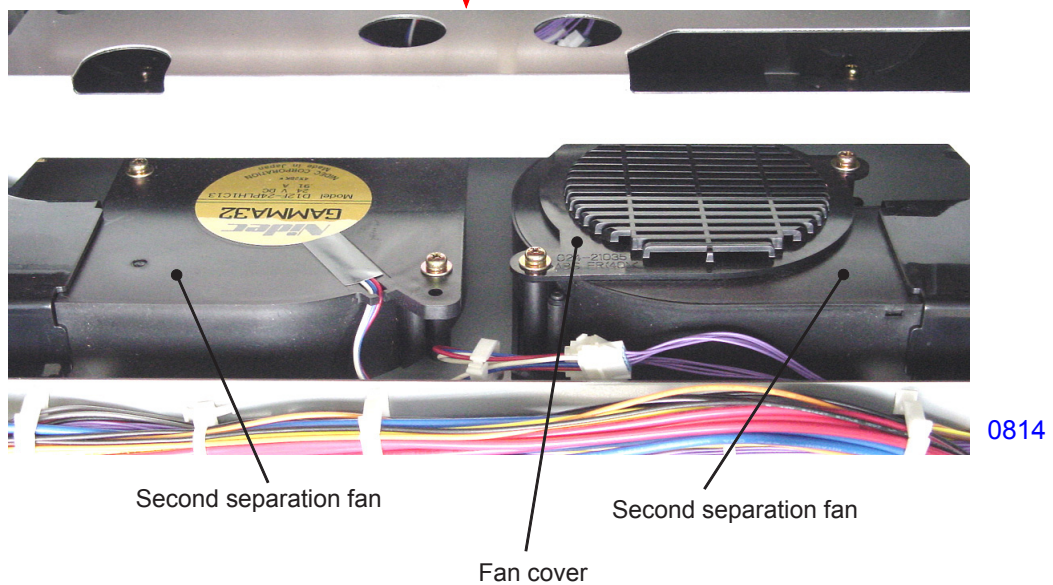
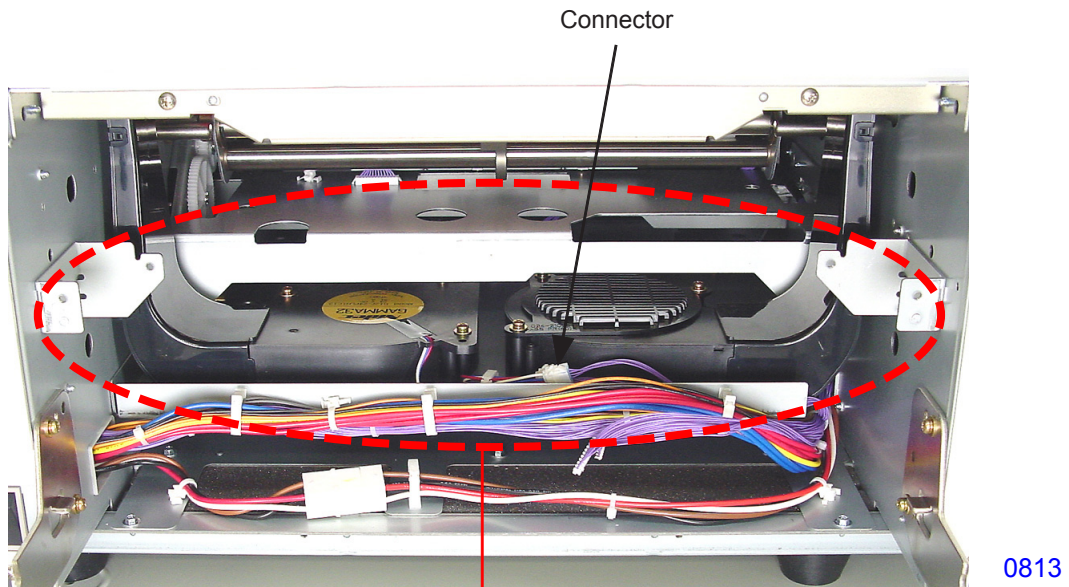
0811



0812

3. Removing the Second Separation Fans

- (1) Switch off power and remove the following parts:
 - Paper receiving tray
 - Paper ejection cover
 - Suction unit
 - (2) Remove the mounting screws (with double-washer, M4 x 40, 3 pcs each), unplug the connector, and remove the two second separation fans.
- * Remove the rear-side separation fan together with the fan cover.

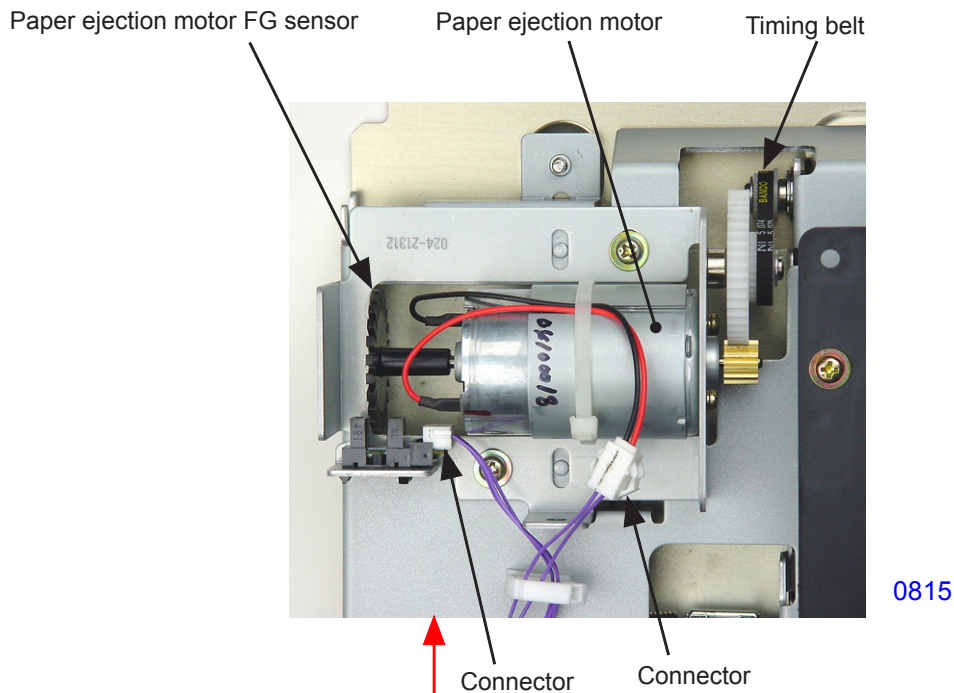


<< Precautions for installation >>

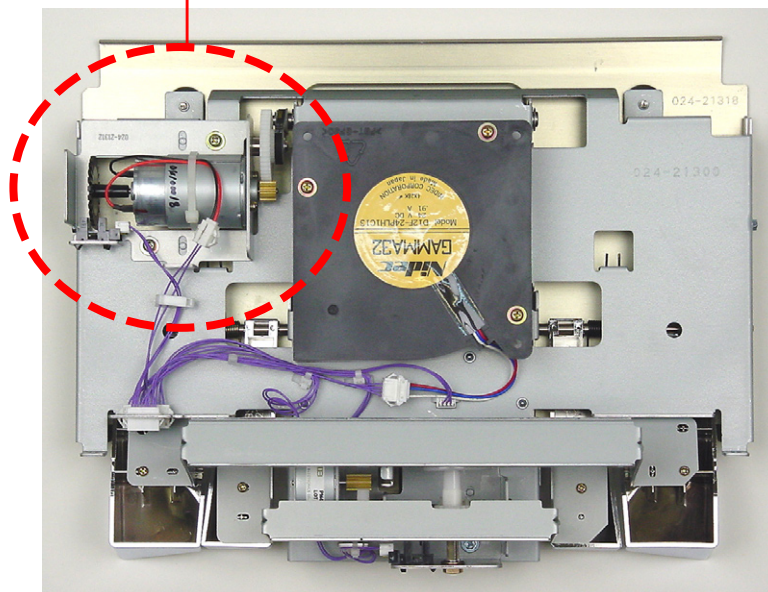
- When installing the separation fans, insert the air outlet for each separation fan into the opening of the duct assembly before fastening the fan.

4. Removing the Paper Ejection Motor and Paper Ejection Motor FG Sensor

- (1) Switch off power and remove the following parts:
 - Paper receiving tray
 - Paper ejection cover
 - Suction unit
- (2) Unplug the connectors (2 locations).
- (3) Remove the mounting screws (with double-washer, M4 x 8, 2 pcs), detach the timing belt, and dismount the paper ejection motor assembly.



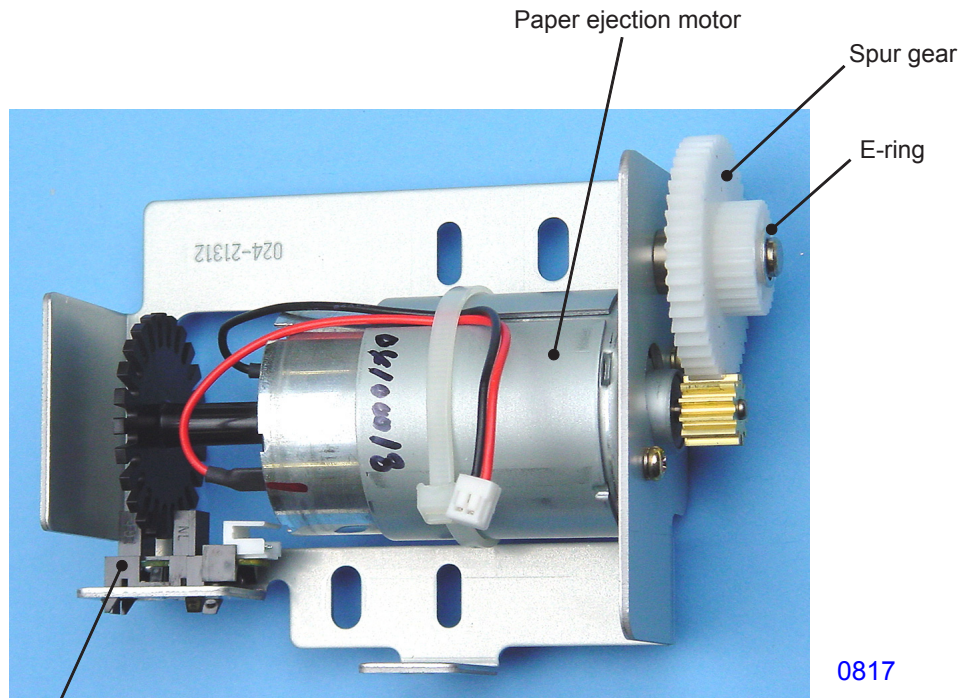
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0816

<< Back side of suction unit >>

- (4) Remove the E-ring and detach the spur gear.
- (5) Remove the mounting screws (with washer, M3 x 5, 2 pcs) and dismount the paper ejection motor.
- (6) Remove the paper ejection motor FG sensor from the sheet metal.

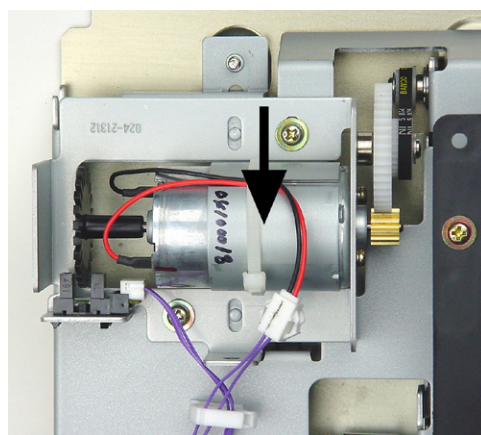


<< Paper ejection motor assembly >>

Paper ejection motor FG sensor

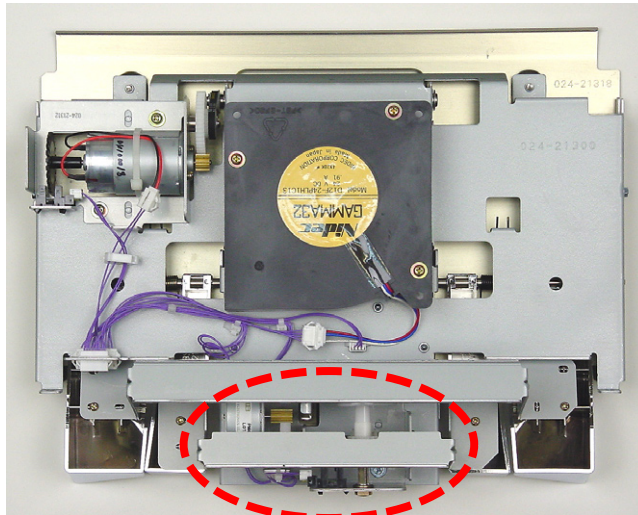
<< Precautions in installation >>

- When installing the paper ejection motor assembly, install and loosely tighten the mounting screws first, then move the paper ejection motor assembly in the direction indicated by the arrow until appropriate tension is applied to the timing belt. Only then should you firmly tighten the mounting screws to secure the paper ejection motor assembly in position.

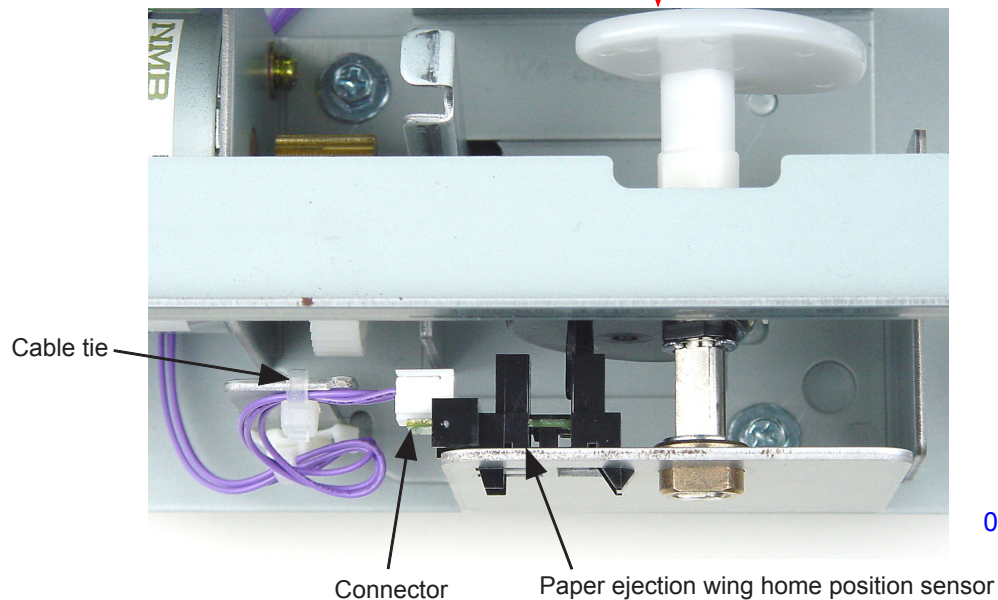


5. Removing the Paper Ejection Wing Home Position Sensor

- (1) Switch off power and remove the following parts:
 - Paper receiving tray
 - Paper ejection cover
 - Suction unit
- (2) Cut the cable tie, unplug the connector, and remove the paper ejection wing home position sensor.



0819



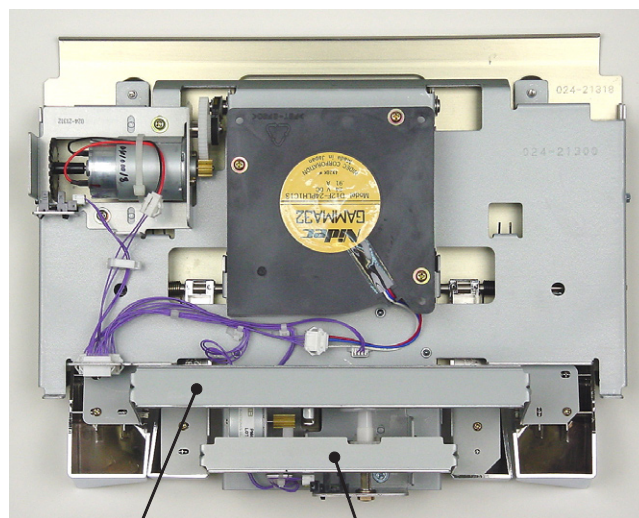
0820

<< Precaution in installation >>

- Bundle the wires with a cable tie during the installation.

6. Removing the Paper Ejection Wing Pulse Motor

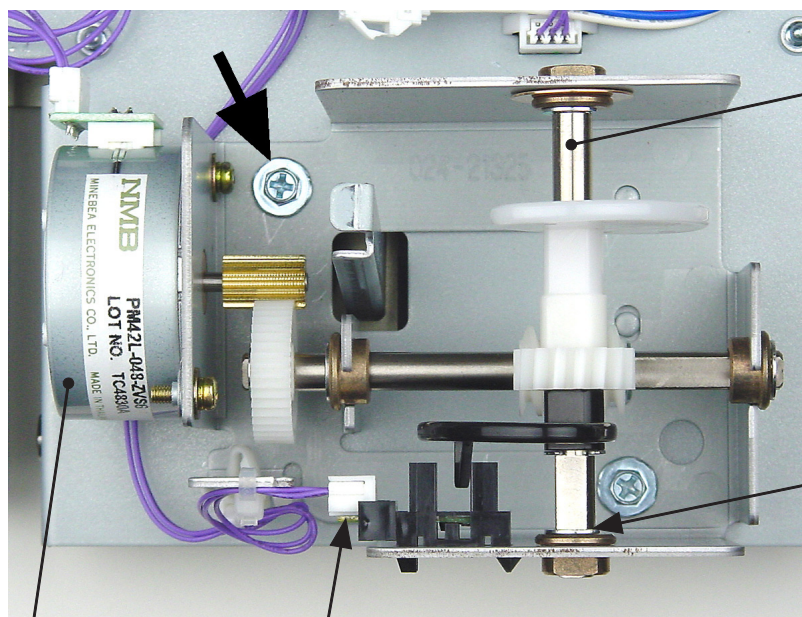
- (1) Switch off power and remove the following parts:
 - Paper receiving tray
 - Paper ejection cover
 - Suction unit
- (2) Remove the connection plate (M) and connection plate (S). (P tight, 3 x 8, 2 pcs each)
- (3) Remove one mounting screw (RS tight with round tip, M4 x 8) from the paper ejection wing pulse motor side.
- (4) Detach the E-ring from the sensor side of the W cam shaft and remove by sliding toward the sensor side along the shaft.
- (5) Remove the mounting screws (with double-washer, M3 x 8, 2 pcs), unplug the connector, and dismount the paper ejection wing pulse motor.



0821

Connection plate M

Connection plate S



W cam shaft

E-ring

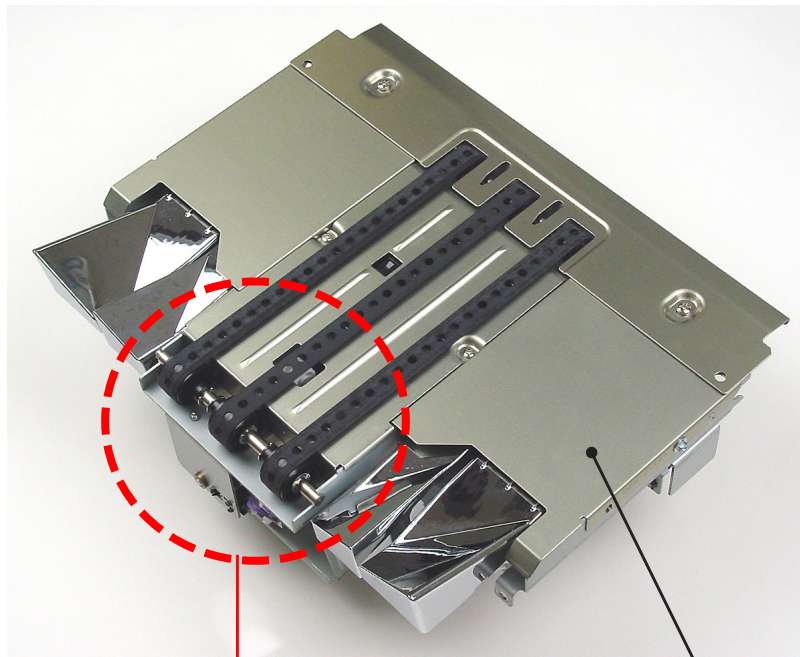
0822

Paper ejection wing pulse motor

Connector

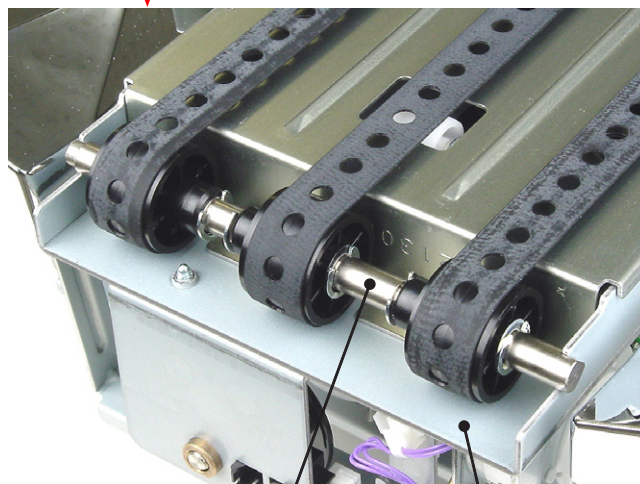
7. Removing the Paper Ejection Sensor and Transfer Belts

- (1) Switch off power and remove the following parts:
 - Paper receiving tray
 - Paper ejection cover
 - Suction unit
- (2) Remove the mounting screws (bind, M4 x 8, 2 pcs), and detach the paper ejection suction plate.
- (3) Disengage and remove the driven shaft assembly from the hook section of the transport base.



0823

Paper ejection suction plate

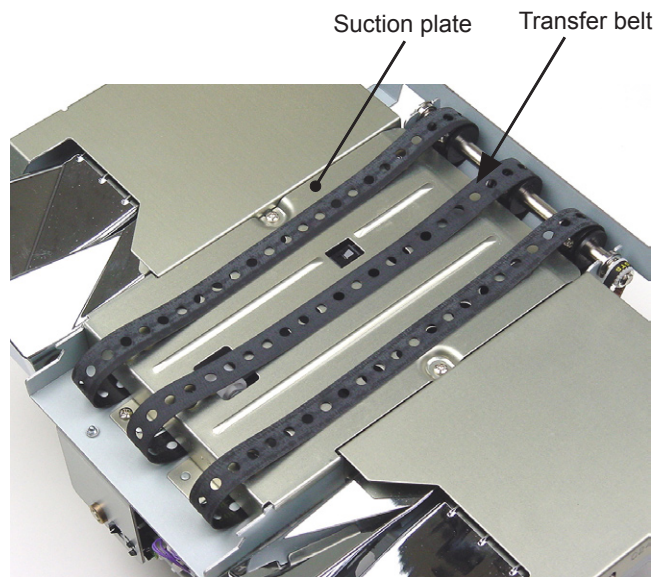


0824

Driven shaft assembly

Transport base

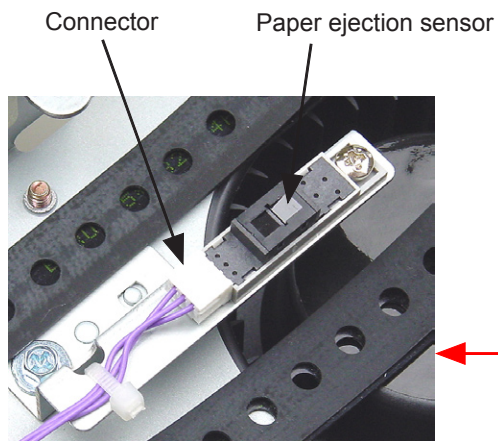
- (4) Remove the mounting screws (bind, M3 x 6, 4 pcs), then remove the suction plate by pulling it through the transfer belts.



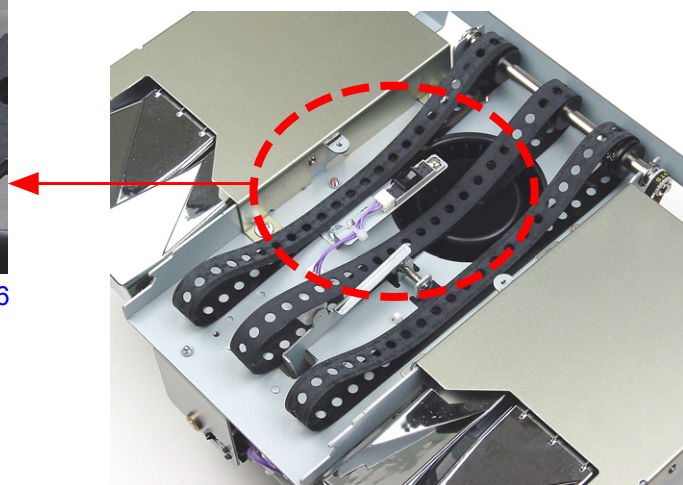
0825

Removing the paper ejection sensor

- (5) Remove the mounting screw (bind, M3 x 6, 1 pc), unplug the connector, and dismount the paper ejection sensor.



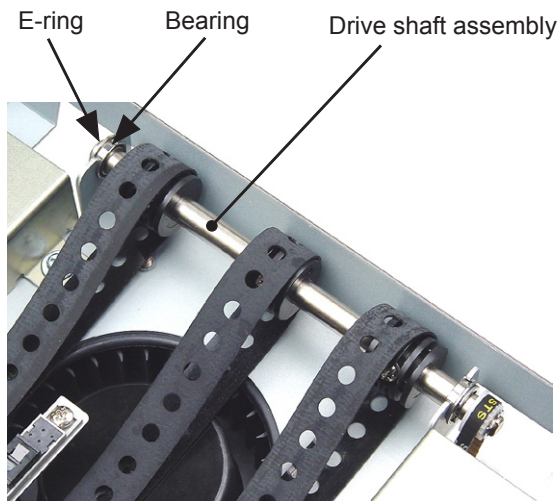
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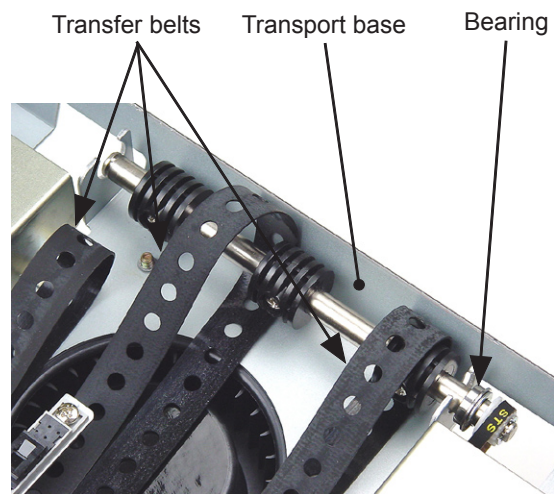
0827

Removing the transfer belts

- (5) Remove the E-ring and bearing from the front side.
- (6) Slightly move the drive shaft assembly, detach the rear-side bearing from the transport base, and remove the transfer belts from the front side of the drive shaft assembly.



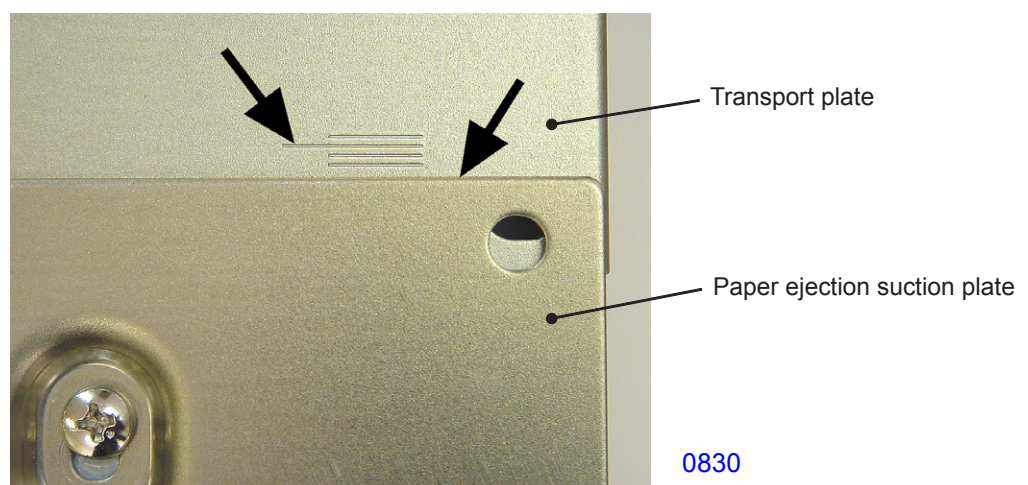
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<< Precautions in installation >>

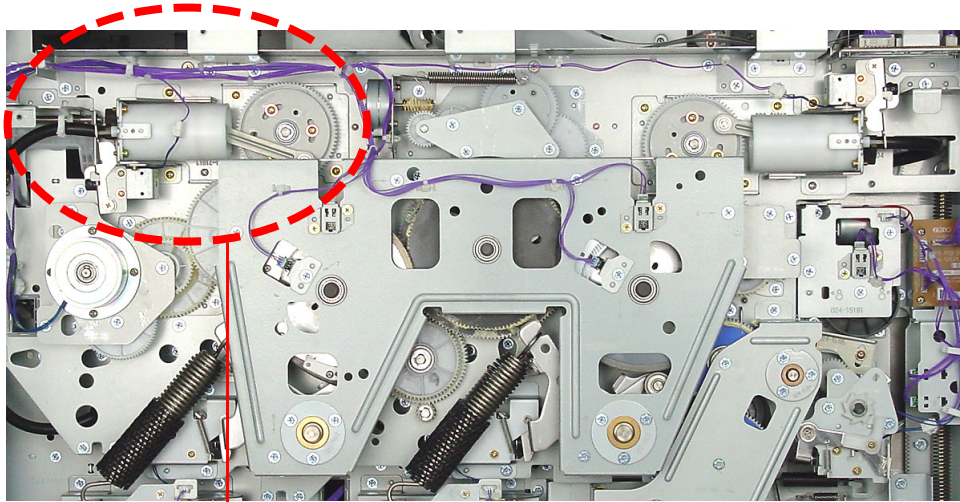
- When installing the drive shaft assembly, confirm that the timing belt is installed correctly.
- When installing the suction plate, confirm that the transfer belts are positioned correctly and that they are not caught by other parts.
- Align the edge surface of the paper ejection suction plate with the longest stamped line on the transport plate on both front and rear sides.



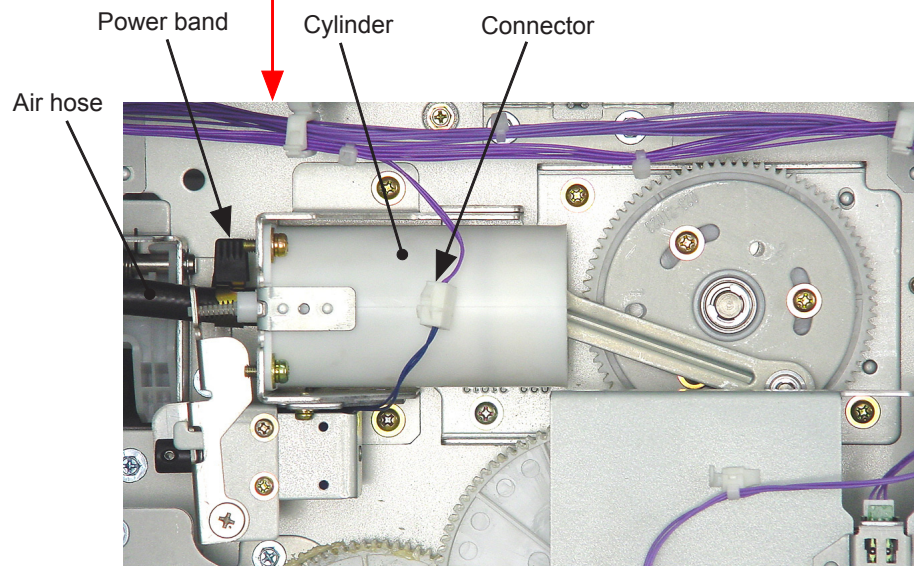
0830

8. Removing the Second Separation Pump Assembly

- (1) Switch off power, remove the cover (rear left) and the cover (rear right) and open the power supply/ system PCB bracket and the SH PCB bracket.
- (2) Unplug the connector, remove the mounting screws (with double-washer, M4 x 8, 5 pcs), and move the power band out of the way. Disconnect the air hose from the cylinder and dismount the second separation pump assembly.



0831

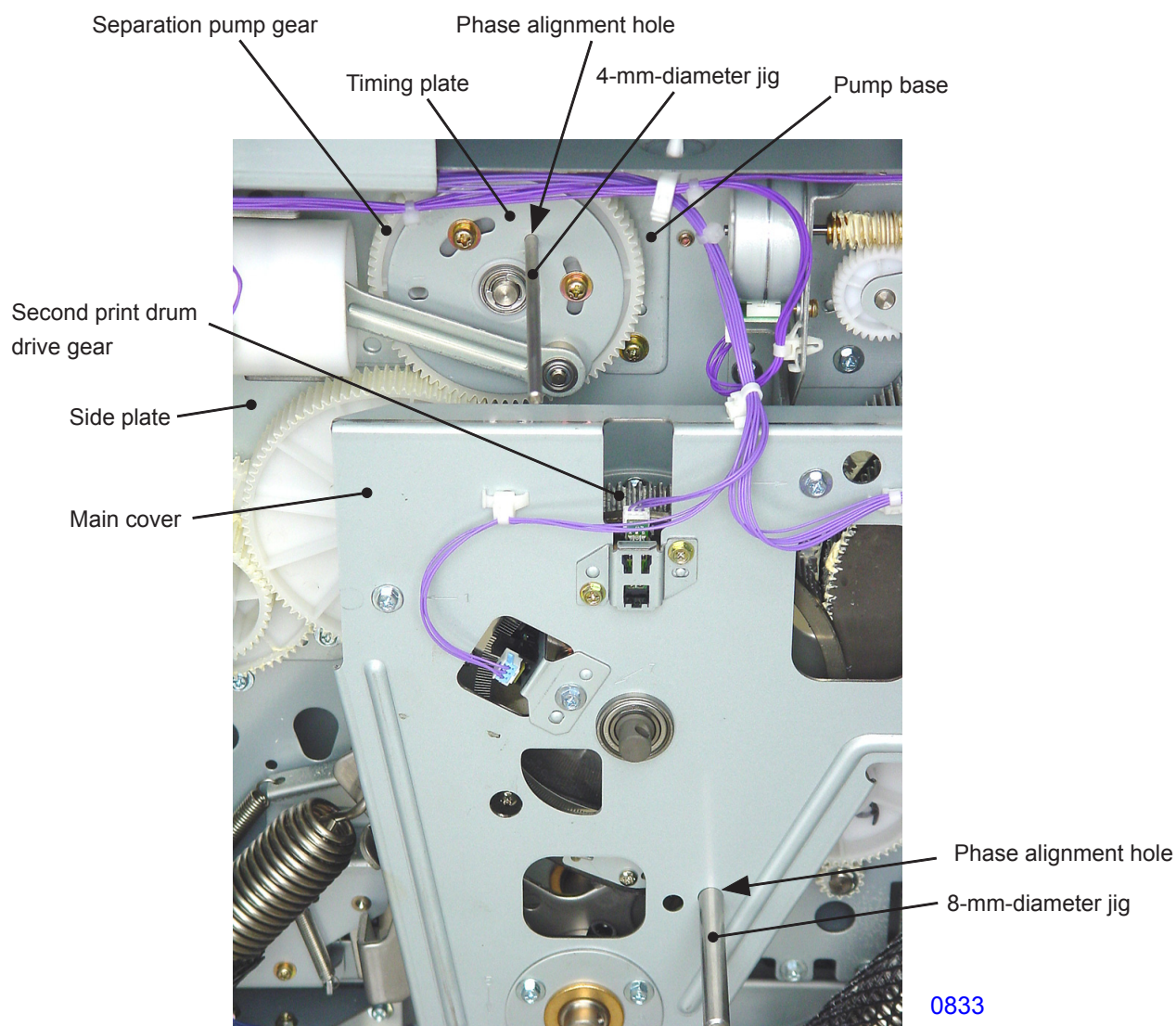


0832

<< Precautions in installation >>

Be sure to align phases between the second print drum drive gear and the separation pump gear.

- (1) Insert the 8-mm-diameter jig into the phase alignment holes in the main cover, second pressure cam, and side plate.
- (2) During installation, make sure that the hole in the timing plate with the <2> mark is positioned at the location shown in the photo. Also confirm that the 4-mm-diameter jig can be inserted through the hole in the main cover into the phase alignment holes in the timing plate and pump base when engaging the gear teeth.



- * The second separation pump assembly and the first separation pump assembly are similar. For subsequent disassembly procedures, refer to the section on the center transport section.

Adjustment

1. Adjusting the Paper Ejection Suction Plate

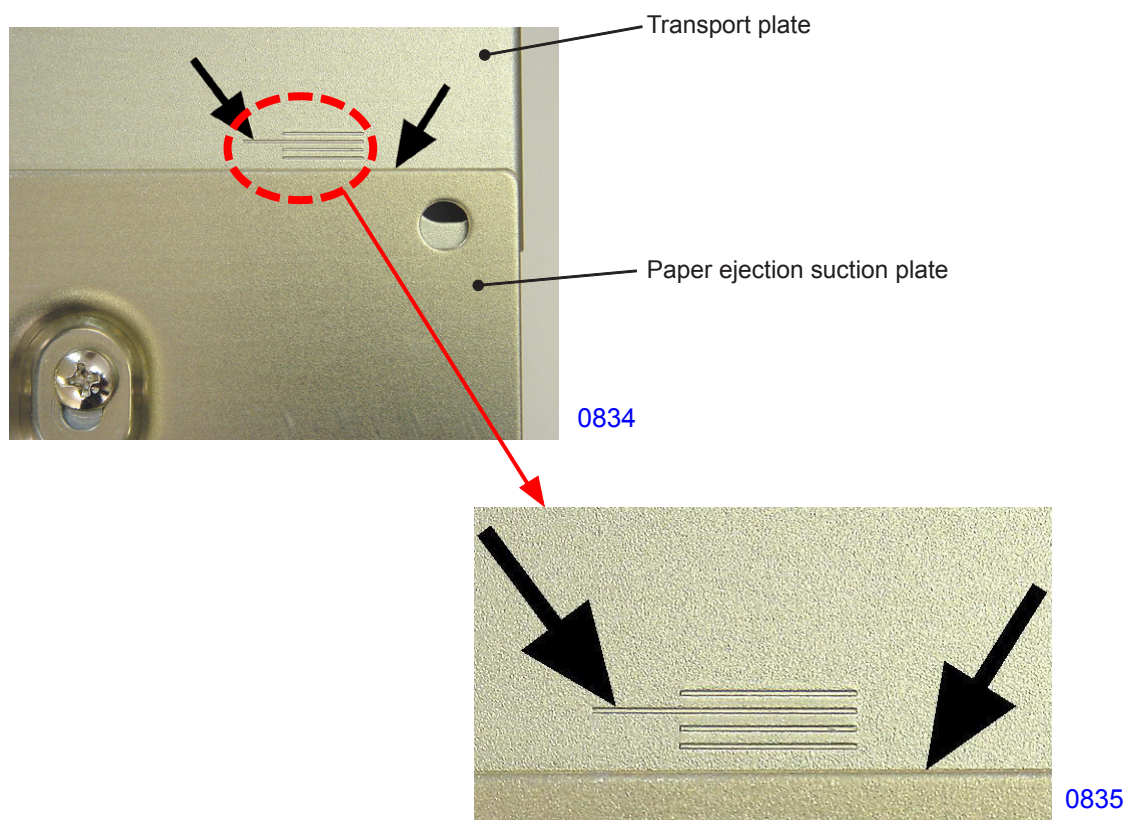
Checks and adjustment procedures

<< When the pressure roller adjusting plate on the operators side is adjusted >>

- (1) Loosen the mounting screws (bind, M4 x 8, 2 pcs) on the paper ejection suction plate.
 - (2) In accordance with the adjustment value of the pressure roller adjusting plate, align the front side of the paper ejection suction plate with the line stamped on the front side of the transport plate toward the paper feed side. Confirm that the rear side aligns with the longest stamped line.
 - (3) Tighten the mounting screws.
- * Make sure that the pressure roller is parallel to the paper ejection suction plate during adjustment.
 - * When the pressure roller adjusting plate is moved one increment mark (1 mm) on the scale, also move the paper ejection suction plate one increment mark (1 mm).

<< When the pressure roller adjusting plate on the machine drive side is adjusted >>

- (1) Loosen the mounting screws (bind, M4 x 8, 2 pcs) on the paper ejection suction plate.
 - (2) In accordance with the adjustment value of the pressure roller adjusting plate, align the rear side of the paper ejection suction plate with the line stamped on the rear side of the transport plate toward the paper feed side. Confirm that the front side aligns with the longest stamped line.
 - (3) Tighten the mounting screws.
- * Make sure that the pressure roller is parallel to the paper ejection suction plate during adjustment.
 - * When the pressure roller adjusting plate is moved one increment mark (1 mm) on the scale, also move the paper ejection suction plate one increment mark (1 mm).



MEMO

CHAPTER 9: PRINT DRUM SECTION

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Adjustment

1. Squeegee Gap Adjustment	9-29
2. Squeegee Pressure Adjustment	9-31
3. Master Position Adjustment	9-33

Mechanism

1. Mechanism for Detection of Master on Print Drum Before Printing

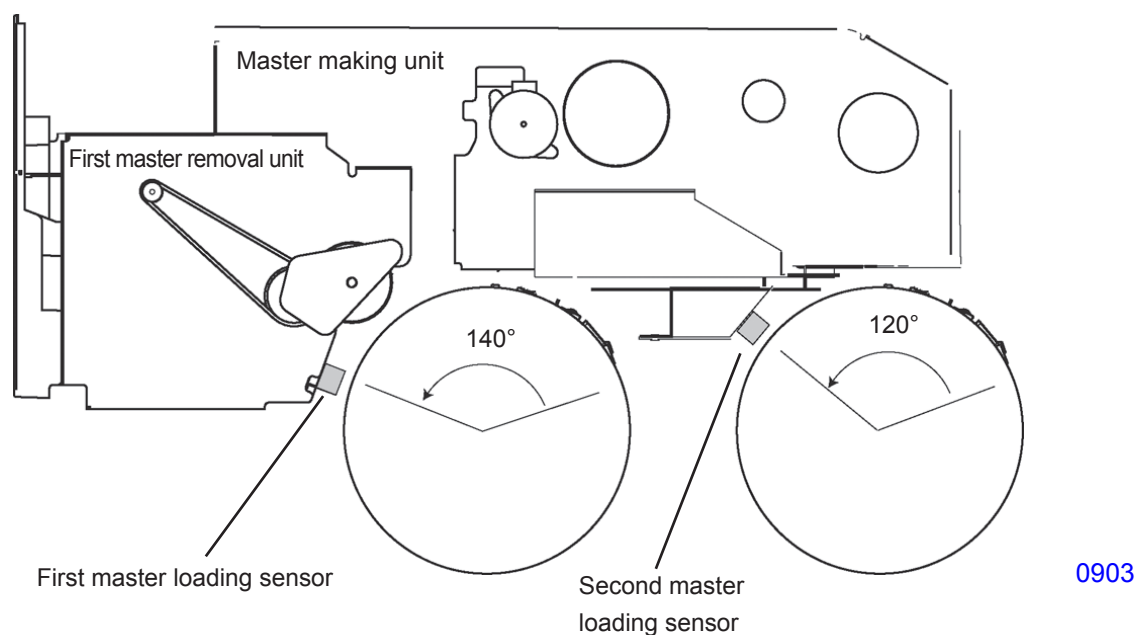
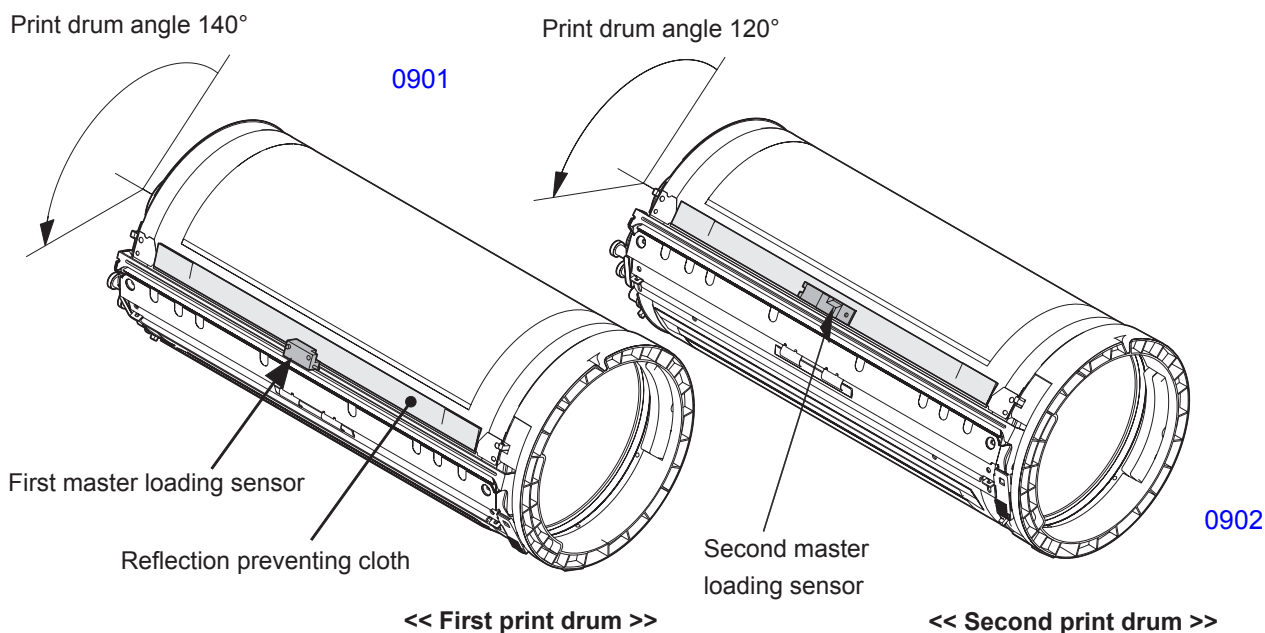
At the beginning of a print job, the machine checks for the presence of a master on the print drum.

Pressing the Start key begins print drum rotation. When the first print drum rotates to an angle of 140°

and the second print drum rotates to an angle of 120° , the master loading sensors check for the presence of a master on the print drums.

The information obtained by the master loading sensors is retained in memory until the print drums are pulled out or power to the machine is switched off. This allows printing to begin immediately for the second and subsequent print jobs.

During the master check at the beginning of a print job, if a master loading sensors does not see its own light reflected back (i.e., because no master is present), the machine determines that there is no master on the print drum.

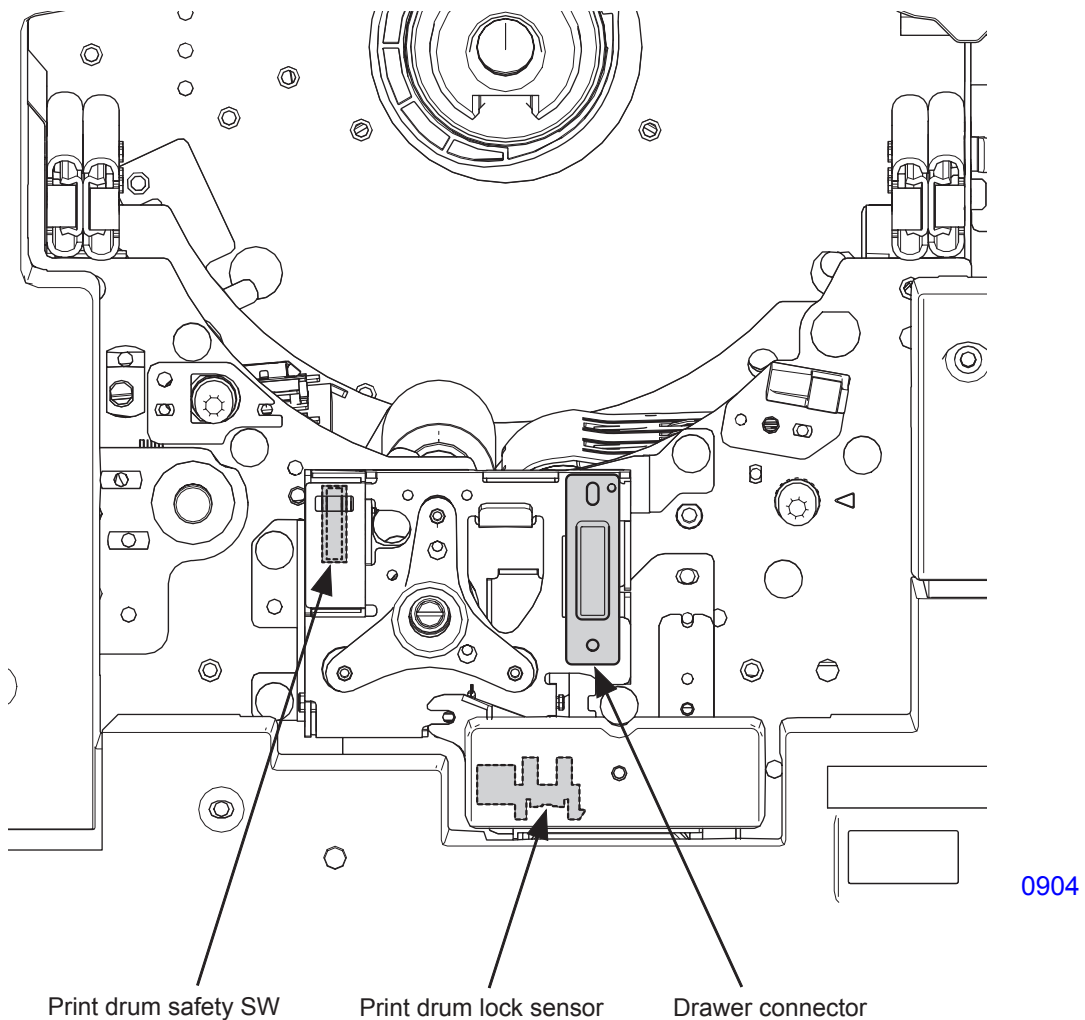


2. Print Drum Check Mechanism

The removal and insertion of each print drum is performed at position B. The drawer connectors, print drum safety switches, and print drum lock sensors determine the print drums are set in the machine.

If the front cover safety switch and either the first print drum safety switch or second print drum safety switch are OFF, the safety mechanism will prevent the main motor, first clamp motor, second clamp motor, first master disposal motor, second master disposal motor, first master compression motor, second master compression motor, first horizontal pulse motor, second horizontal pulse motor, cutter motor, and master making unit transport pulse motor from switching ON.

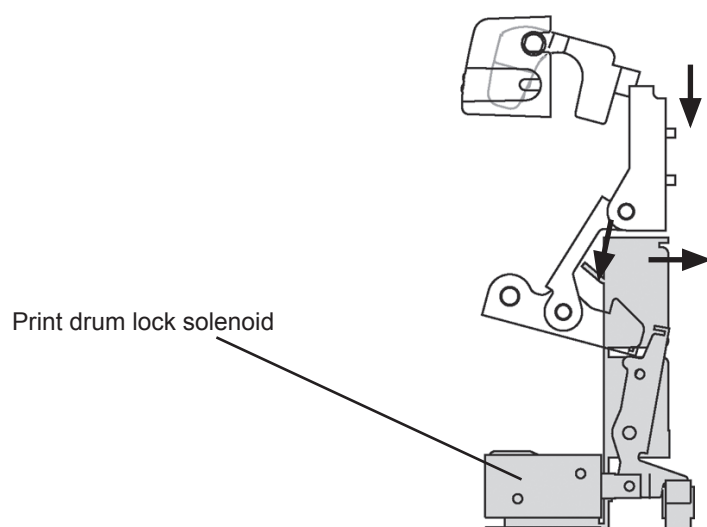
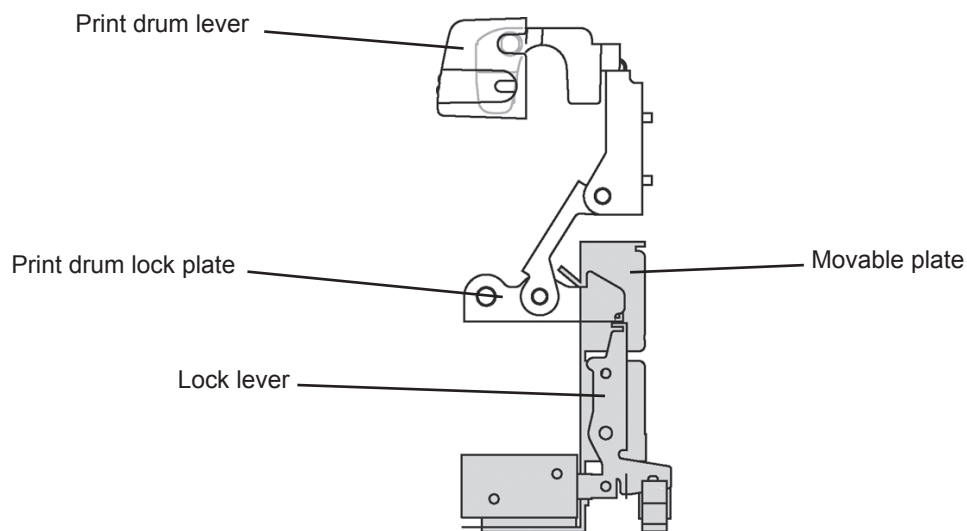
When the front cover safety switch is ON, if either the first print drum safety switch or second print drum safety switch is ON although the other is OFF, the machine will operate (to allow printing with a single print drum).



3. Print Drum Lock Mechanism

When the print drum is set in the main unit, the print drum lock plate presses the lock lever and hooks it on the movable plate of the horizontal sliding unit. Since the force of the return spring returns the lock lever to the lock position, the print drum lock plate will not descend, even if the print drum lever is pulled (print drum in locked condition).

Opening the front cover and pressing the print drum pull-out button will move the machine to position B and unlock the drive mechanism (of either the first or second print drum). The print drum solenoid will then switch ON, and the lock lever will move to the lock release position. Pulling the print drum lever lowers the print drum lock plate to permit removal of the print drum (print drum in unlocked condition).



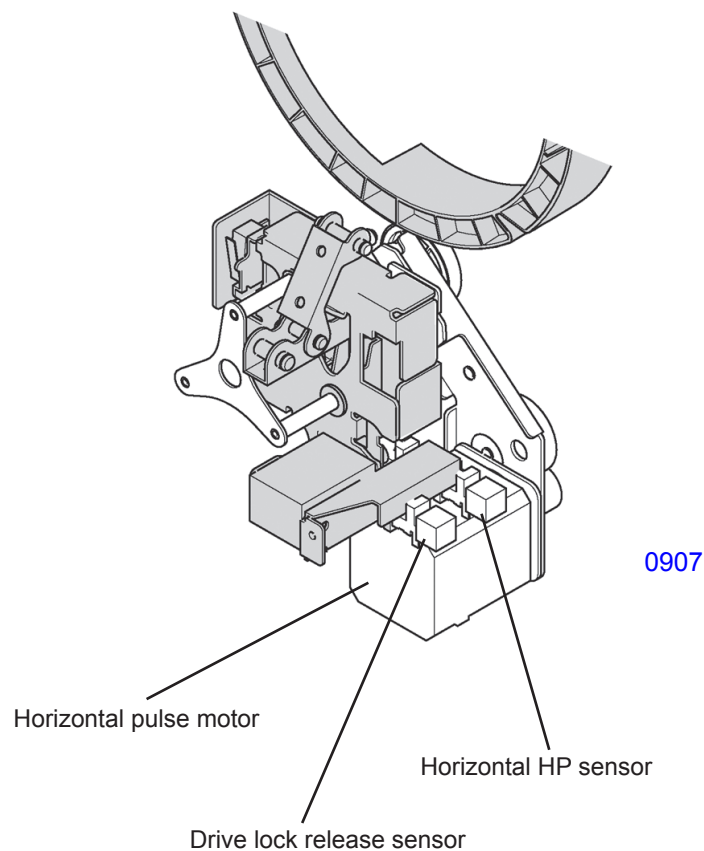
0905

4. Print Drum Horizontal Sliding Mechanism

The horizontal pulse motor slides the print drum side-ways within the machine to adjust the horizontal printing position. When the print drum is set in the machine, it connects to the horizontal sliding assembly by the print drum lock mechanism. When the horizontal pulse motor of the horizontal sliding base assembly rotates, the whole horizontal sliding assembly slides with the print drum attached on the assembly.

The horizontal HP sensor detects the horizontal home position.

On the sketch below, the gray shaded area slides horizontally within the machine to change the horizontal printing position on the paper.



5. Print Drum Drive Lock Release Mechanism

Pressing the print drum pull-out button allows the first and second print drums to be pulled out.

The first and second print drums are pulled out and inserted at position B. However, due to the phase difference between the first and second print drums, they are never positioned at position B at the same time.

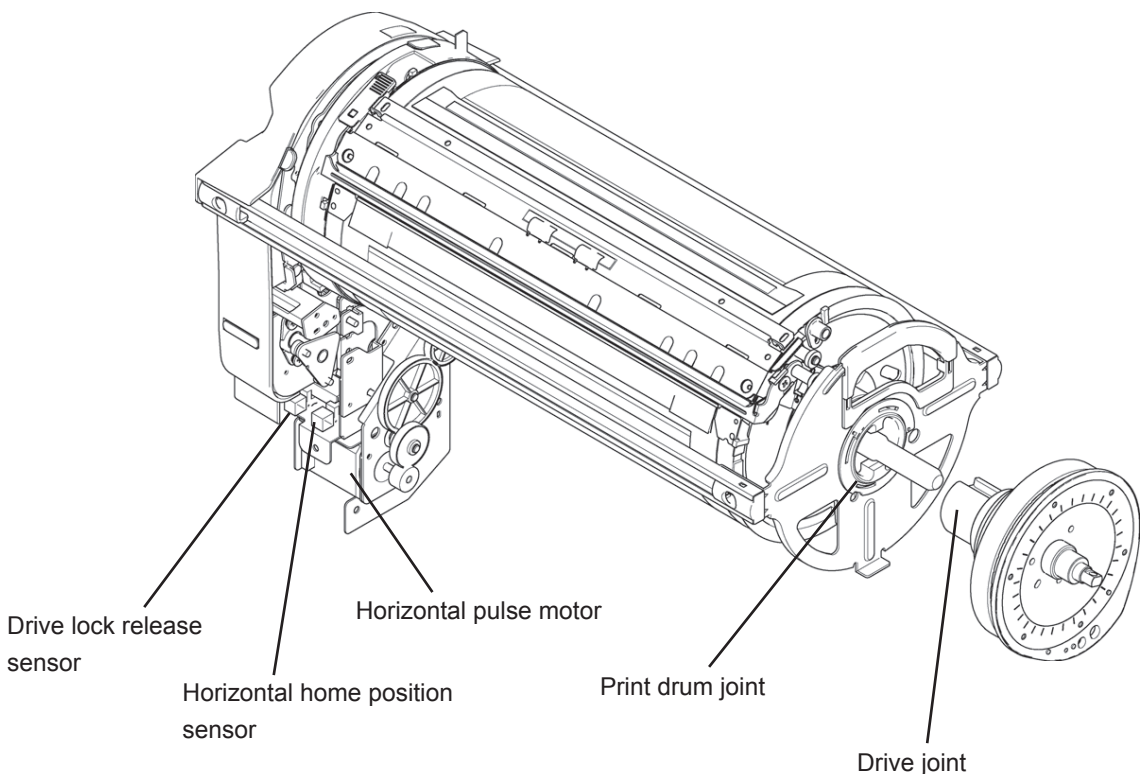
Pressing the print drum pull-out button causes the horizontal pulse motor of either the first or second print drum, whichever moves to position B first, to move the print drum located at position B all the way toward the front side (the position is checked by the drive lock release sensor). The drive joint of the main unit is then disengaged from the print drum drive joint, cutting off the transfer of rotation from the main unit to the print drum.

The other print drum then moves to position B, allowing removal and insertion of the other print drum.

If a print job is executed after the print drums are inserted, the machine will move the print drum whose drive lock was released to position B, after which the horizontal pulse motor moves the print drum body to the horizontal home position sensor position, where the drive joint of the main unit engages with the print drum drive joint.

During print drum removal, the current position in the horizontal direction set on the main unit panel is saved to the main unit memory.

At the start of a print job, the print drum returns to the horizontal position saved to the main unit memory.



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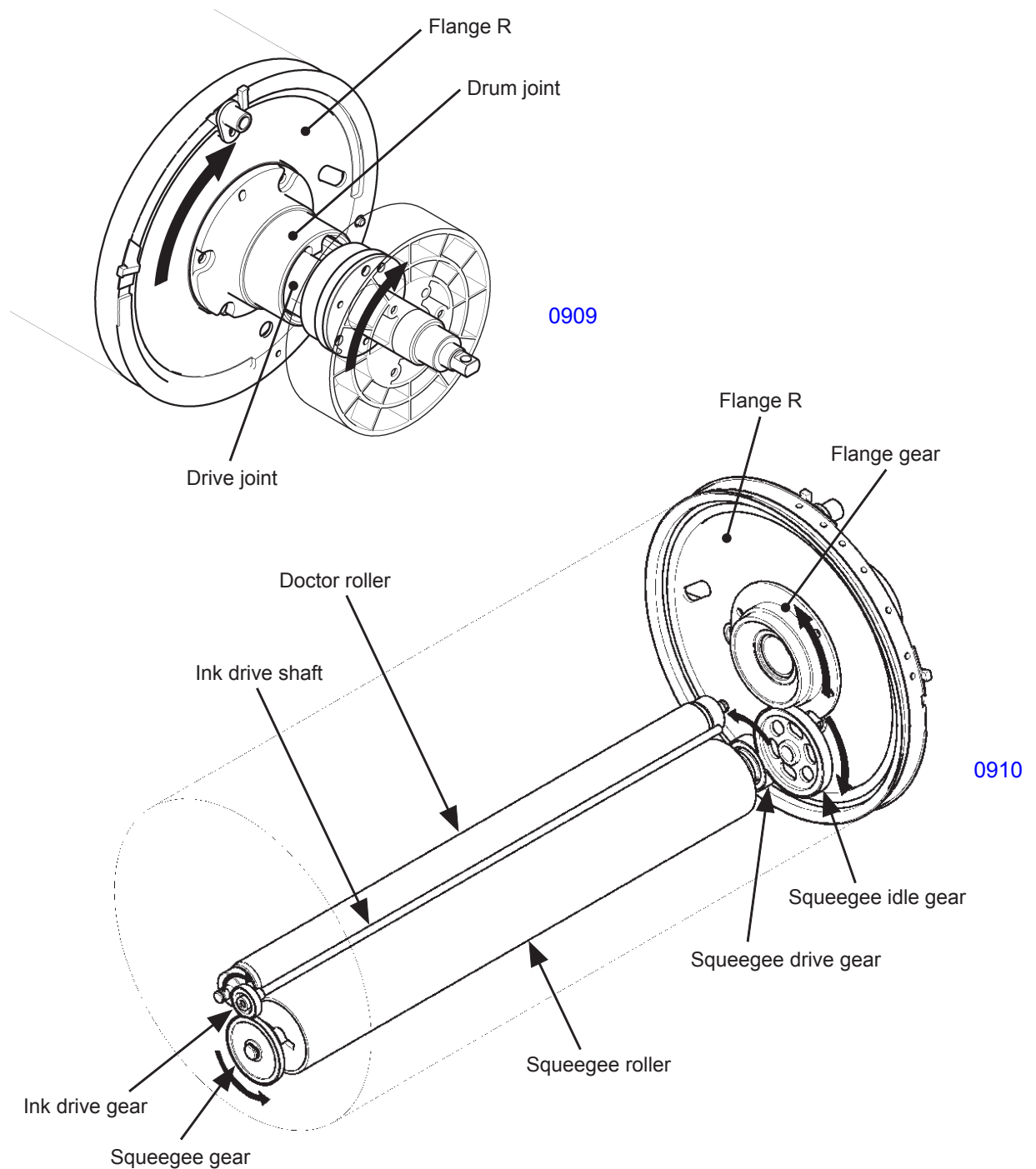
6. Print Drum Rotation Mechanism

When the main motor rotates, its drive force is transmitted to flange R via the print drum drive assembly of the main drive section and the print drum joint.

The rotation is then transferred to the squeegee drive gear via the flange gear attached to flange R and the squeegee idle gear, turning the squeegee roller.

When the squeegee roller rotates, the squeegee gear attached on the front side of the squeegee roller turns the ink drive gear, rotating the ink drive shaft.

The squeegee drive gear is equipped with a one-way clutch to keep the squeegee roller from rotating when the print drum is rotated manually in reverse.



7. Inking Mechanism

When the swirl of ink moves away from the ink sensor while the main motor is ON and the print drum is rotating, the ink motor will turn ON, pumping ink from the ink cartridge.

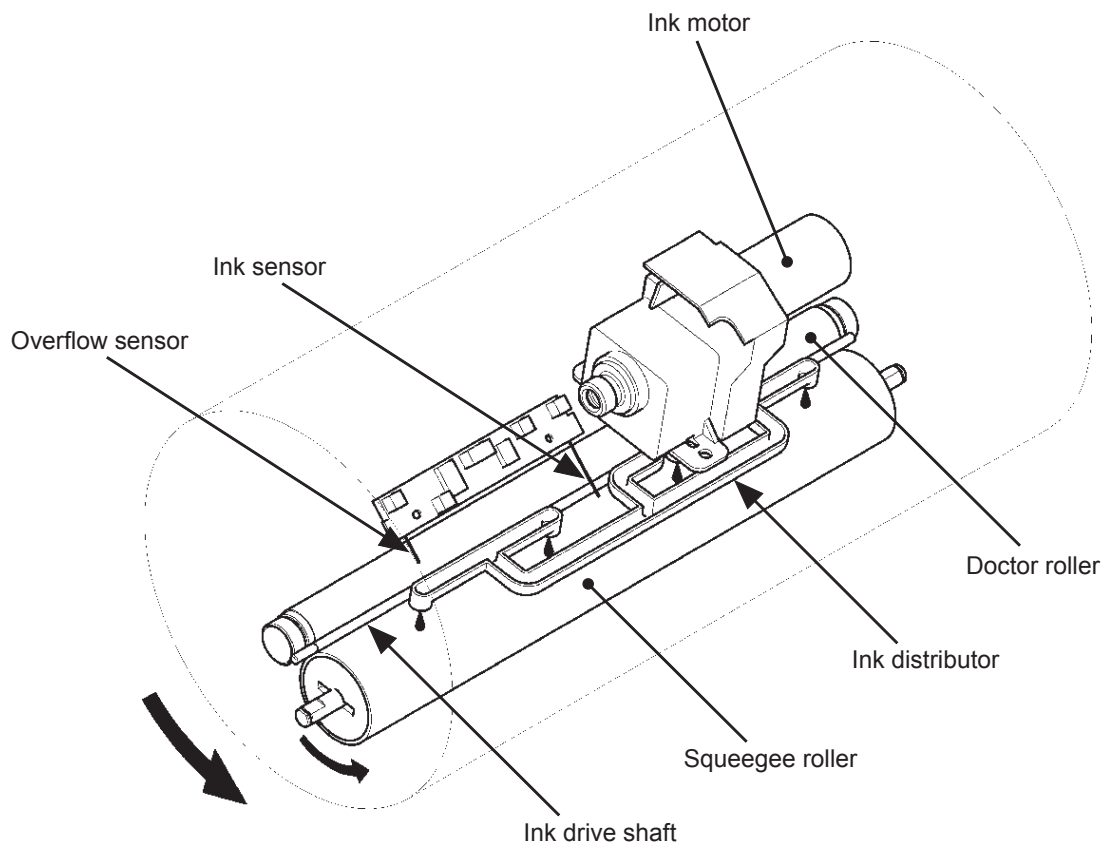
The pumped ink will be applied to the squeegee roller from the holes on the ink distributor.

When ink contacts the ink sensor, the ink motor switches OFF.

The ink applied to the squeegee roller is swirled between the squeegee roller and the doctor roller (the ink drive shaft rotates to produce a smooth swirl of ink).

A small gap is present between the squeegee roller and the doctor roller, through which ink transfers onto the inner surface of the print drum..

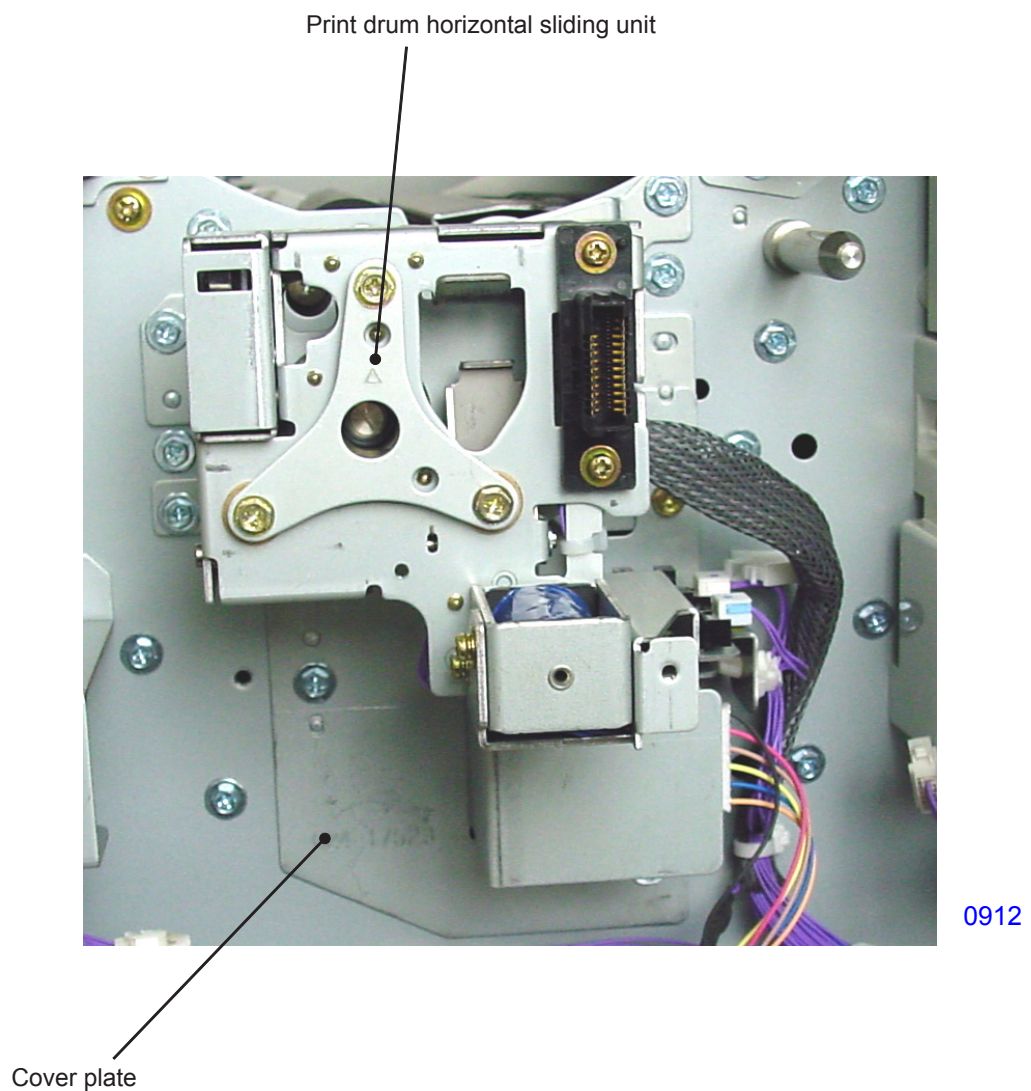
The overflow sensor checks and prevents excess amount of ink from filling the print drum which may cause ink leakage from the print drum.



Disassembly

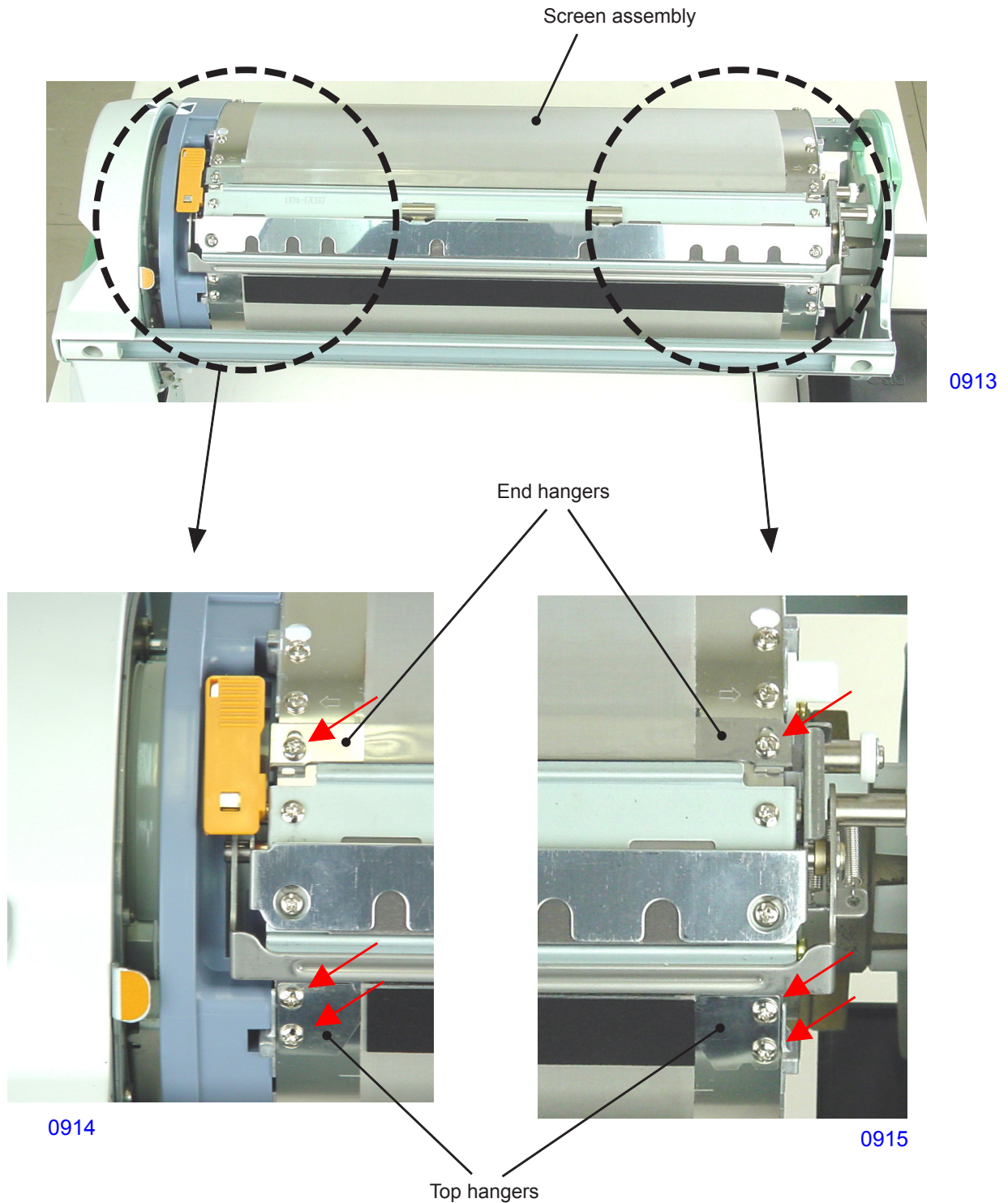
1. Removing the Print Drum Horizontal Sliding Unit

- (1) Pull out the print drum, switch off power, and dismount the cover (front lower).
- (2) Remove the motor cover plate. (RS tight, M4 x 8, 2 pcs)
- (3) Remove the mounting screws (RS tight, M4 x 8, 4 pcs), unplug the connectors (5 locations), pull out the coaxial cable, and dismount the print drum horizontal sliding unit. (Turn the unit slightly clockwise when pulling out.)



2. Removing the Screen Assembly

- (1) Perform the Confidential operation and remove the print drum out of the machine.
 - (2) Remove the end hanger mounting screws (bind, M3 x 6, 2 pcs).
 - (3) Remove the top hanger mounting screws (bind, M3 x 6, 4 pcs) and dismount the screen assembly.
- * Be careful to avoid adding folding marks or creases to the screen during the removal or installation.



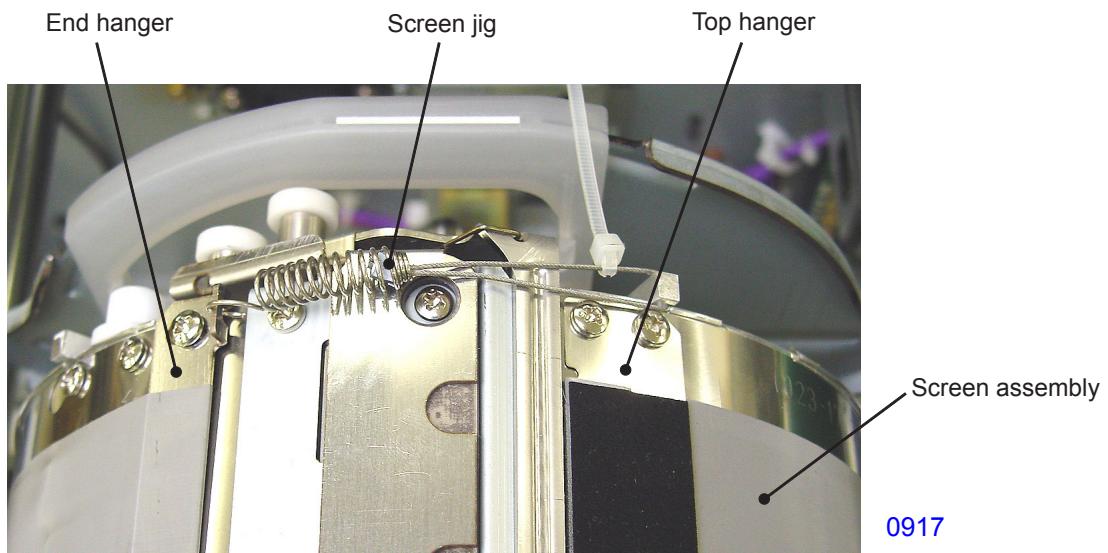
<< Installation procedure >>

- (1) Fasten the top hangers, wrap the screen assembly around the print drum, and temporary fasten the end hangers.
- (2) Engage the hook on the spring side of the screen jig to the hole in the end hanger. Hook the other end of the jig to the flange projection.
- (3) Set the screen jigs on the front and rear sides to apply tension to the screen assembly, then tighten the end hanger mounting screws firmly.
- (4) Remove the screen jigs after securing the mounting screws.



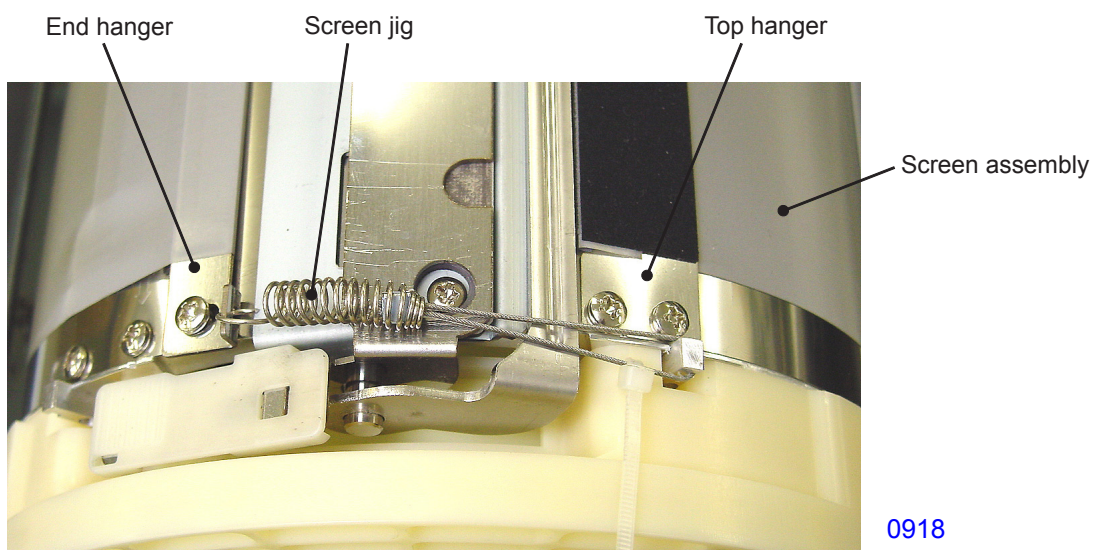
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<< Screen jig >>



0917

<< Rear >>

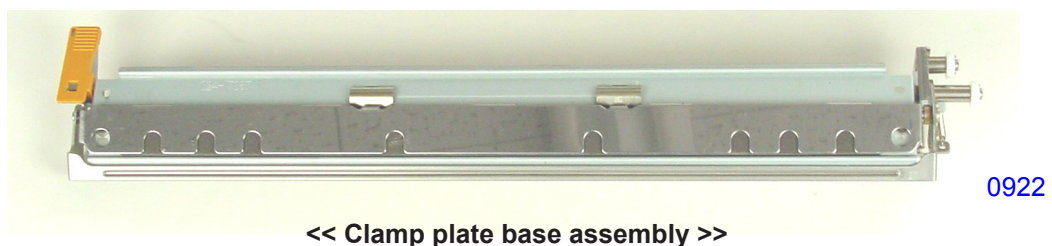
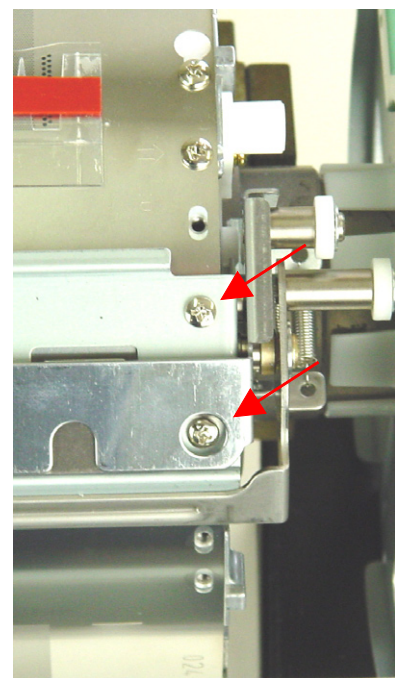
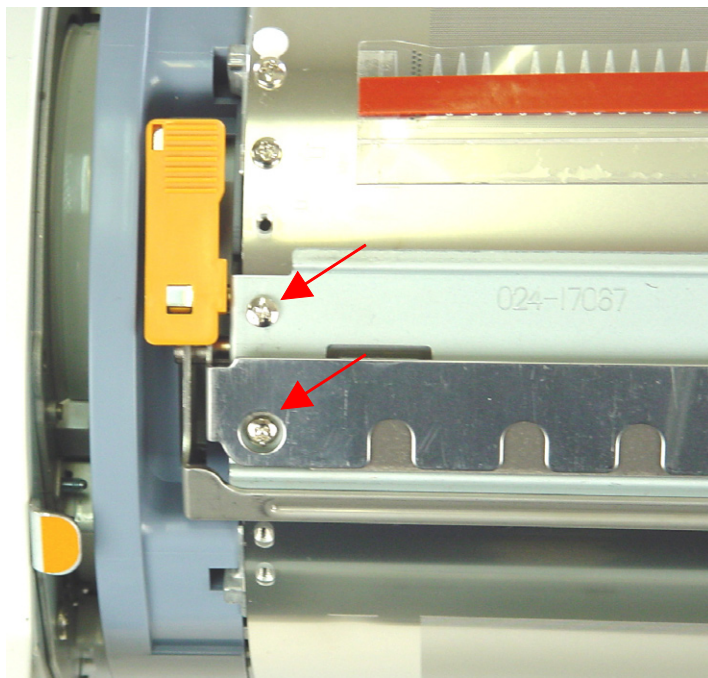
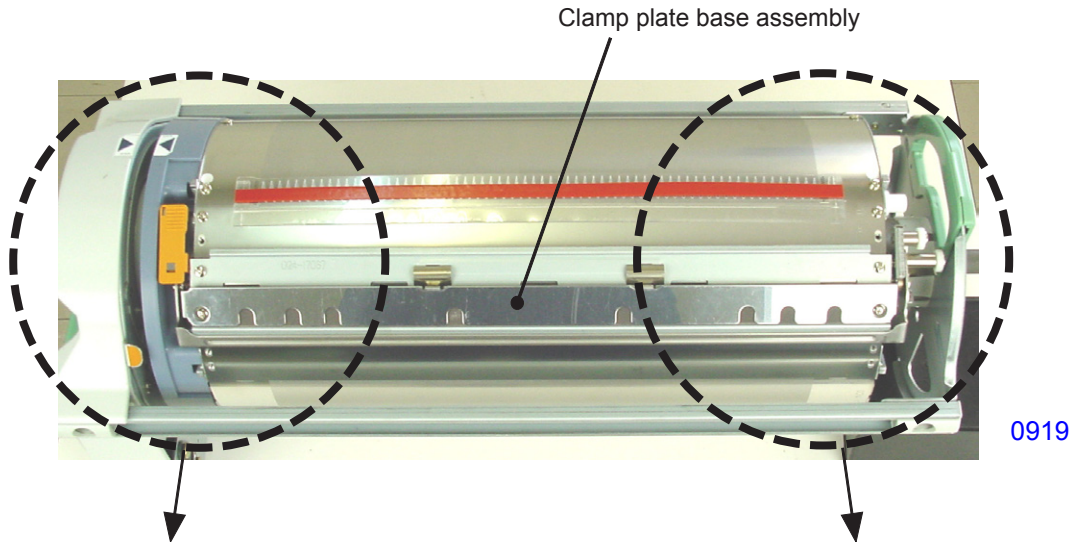


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<< Front >>

3. Removing the Clamp Plate Base Assembly

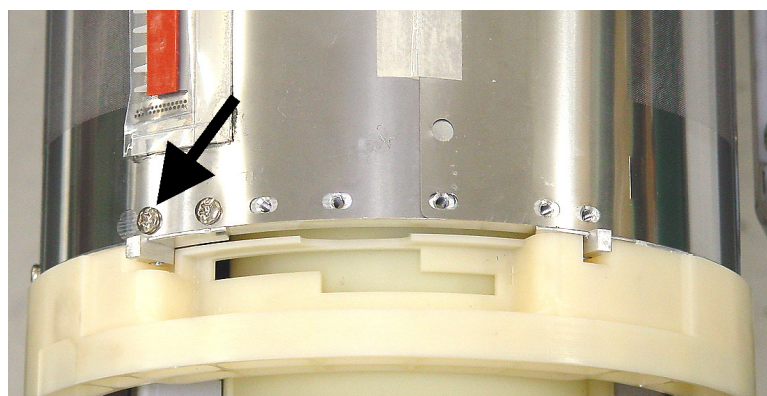
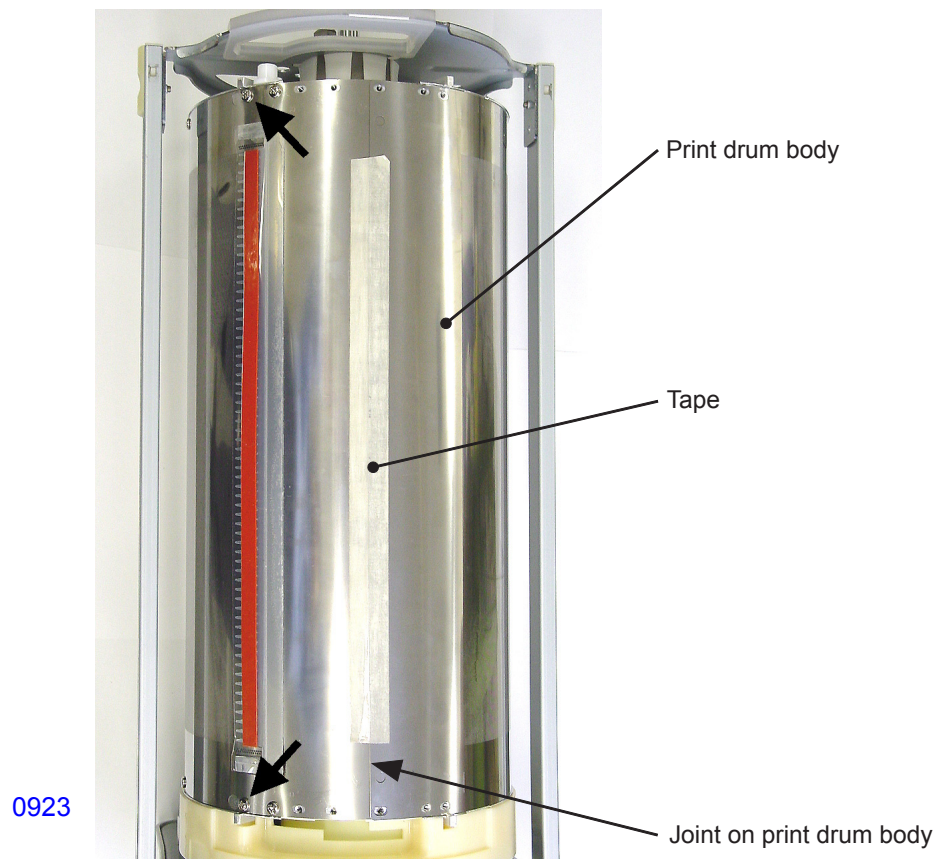
- (1) Perform the Confidential operation and remove the print drum out of the machine.
- (2) Remove the mounting screws (bind, M3 x 6, 4 pcs) and dismount the clamp plate base assembly.



<< Clamp plate base assembly >>

4. Removing the Print Drum Body

- (1) Perform the Confidential operation and remove the print drum out of the machine.
- (2) Remove the following parts:
 - Screen assembly
 - Clamp plate base assembly
- (3) Loosen the mounting screws (bind, M3 x 6, 2 pcs) in the keyhole-shaped holes (indicated by arrows in the photo) at the rear side on the print drum body. Remove the other mounting screws (bind, M3 x 6, 10 pcs).
- (4) While holding the joint to keep the print drum from expanding suddenly, remove the tape (the tape will be reused in reassembly).
- (5) Move the print drum body slightly to dislodge the mounting screws from the keyhole-shaped holes, then dismount the print drum body.

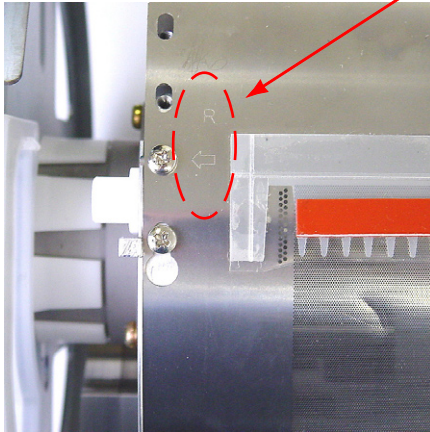


<< Enlarged Front View >>

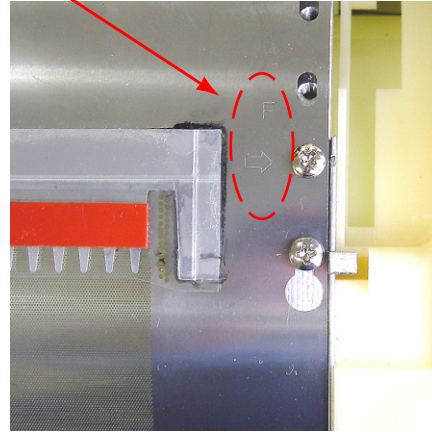
<< Installation procedure >>

- (1) Each end of the print drum body on the rear side is engraved with an arrow (→) and either an <F> or an <R>. Set the print drum body so that the side with the <F> is on the front side and the side with the <R> is on the rear. Hook the screws loosened for removal of flange F and flange R to the keyhole-shaped holes located on the rear end of the print drum body.
- (2) Loosely tighten the two screws at the section indicated by the arrow (→) on both ends of the print drum body.

< Engraved Markings >

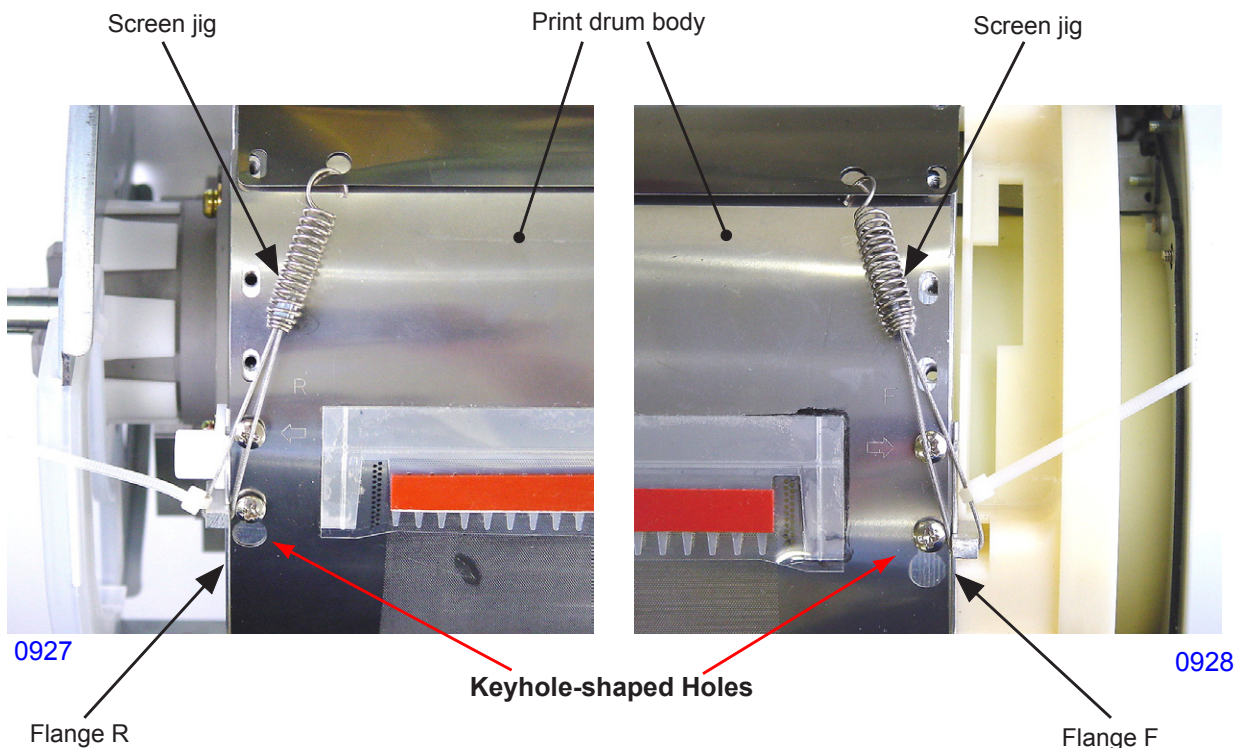


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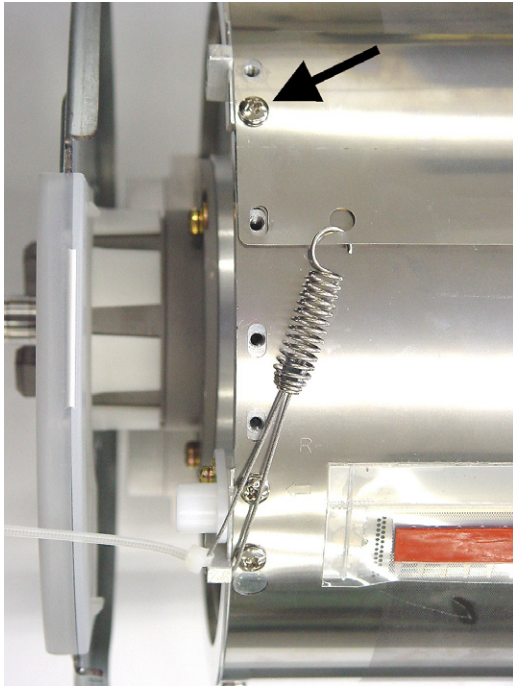
- (3) On both front and rear side, hook the screen jigs to the inner holes on the leading edge of the print drum body, and hook the looped end of the jig onto the flange projections.
- (4) While pressing flange F and flange R against the print drum body, firmly tighten the two screws installed at the arrow (→) markings in step (2).
- (5) Likewise, while pushing flange F and flange R against the print drum body, firmly tighten the two screws in the keyhole-shaped holes, then tighten the remaining eight screws in the direction of the front end of the print drum body.



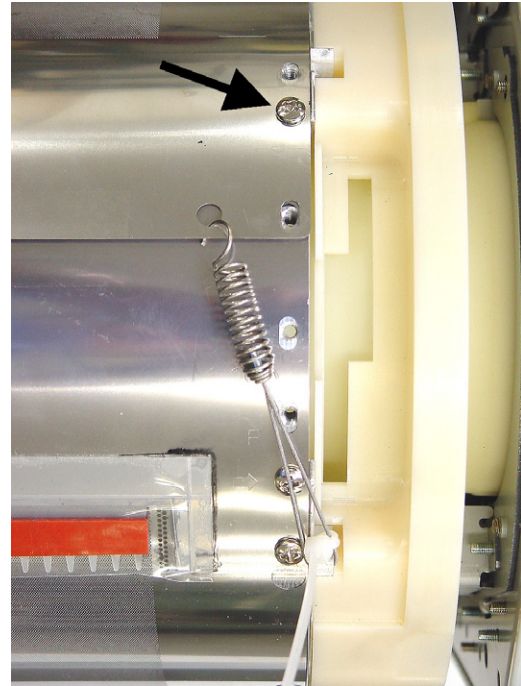
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- (6) Install screws (bind, M3 x 6, use mounting screws of other parts) into the second holes (on both front and rear sides) from the front end of the print drum body.

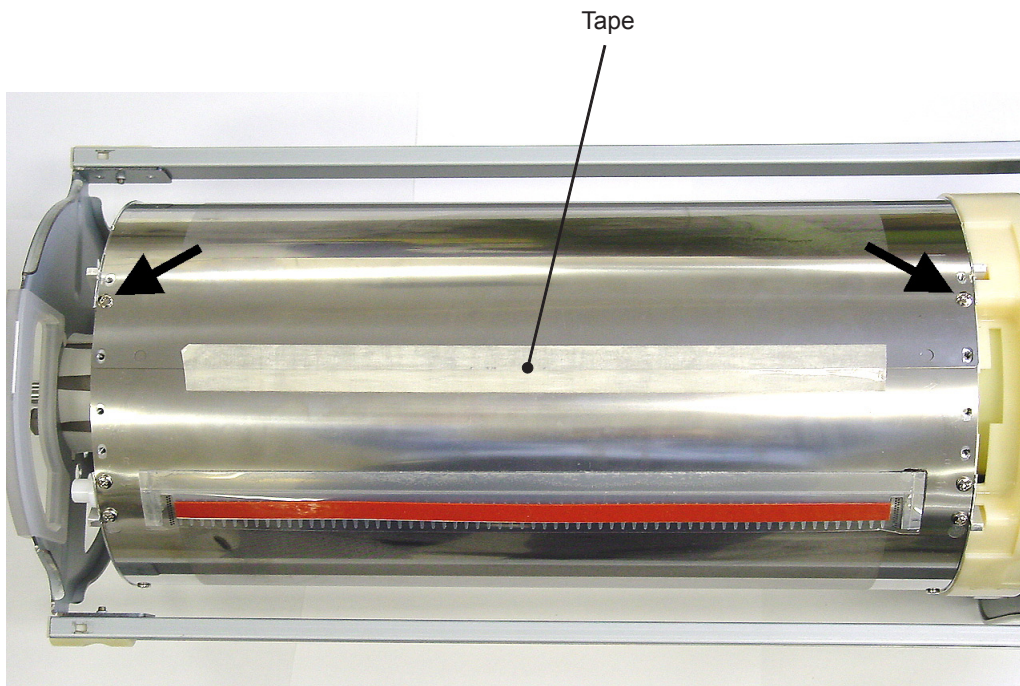


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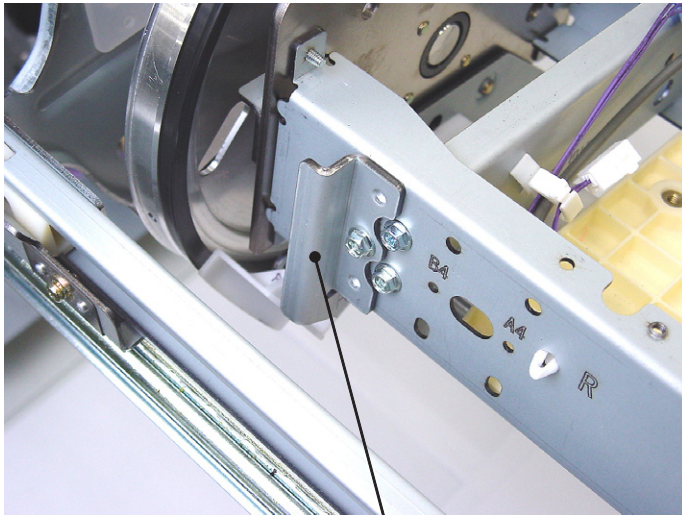
- (7) Remove the screen jigs and attach the tape on the joint section of the print drum body.
- * Attach the tape so that the joint section on the print drum body does not rise. If the joint section of the print drum rises, wrinkling of the master during master loading or noise may occur during printing.
- (8) Remove the two screws installed in step (6).



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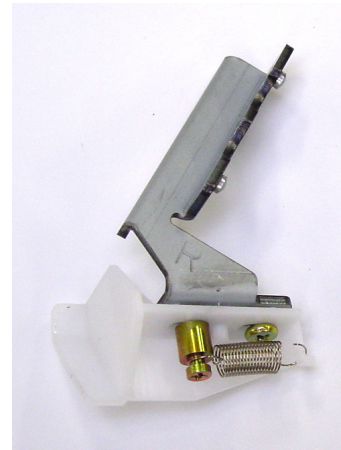
5. Removing ink scraper plates F & R

- (1) Perform the Confidential operation and remove the print drum out of the machine.
- (2) Remove the following parts:
 - Screen assembly
 - Clamp plate base assembly
 - Print drum body
- (3) Remove the mounting screws (RS tight, M3 x 8, 1 pc each) and dismount ink scraper plates F and R.



Ink scraper plate R

0932



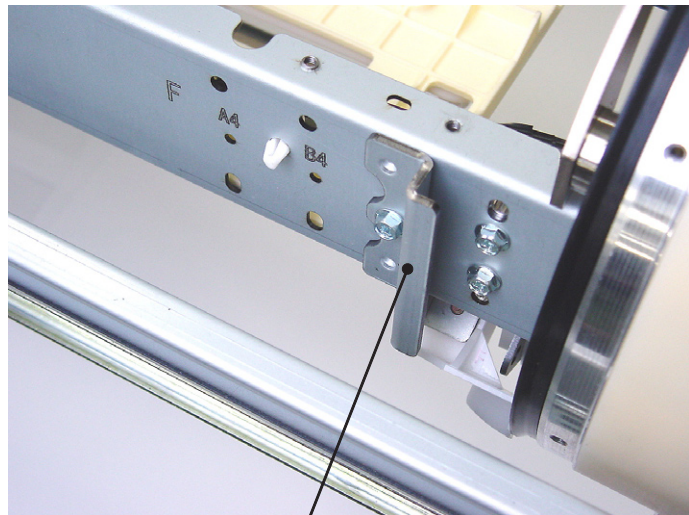
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<<Ink scraper plate R >>

0934



<< Ink scraper plate F >>



0935

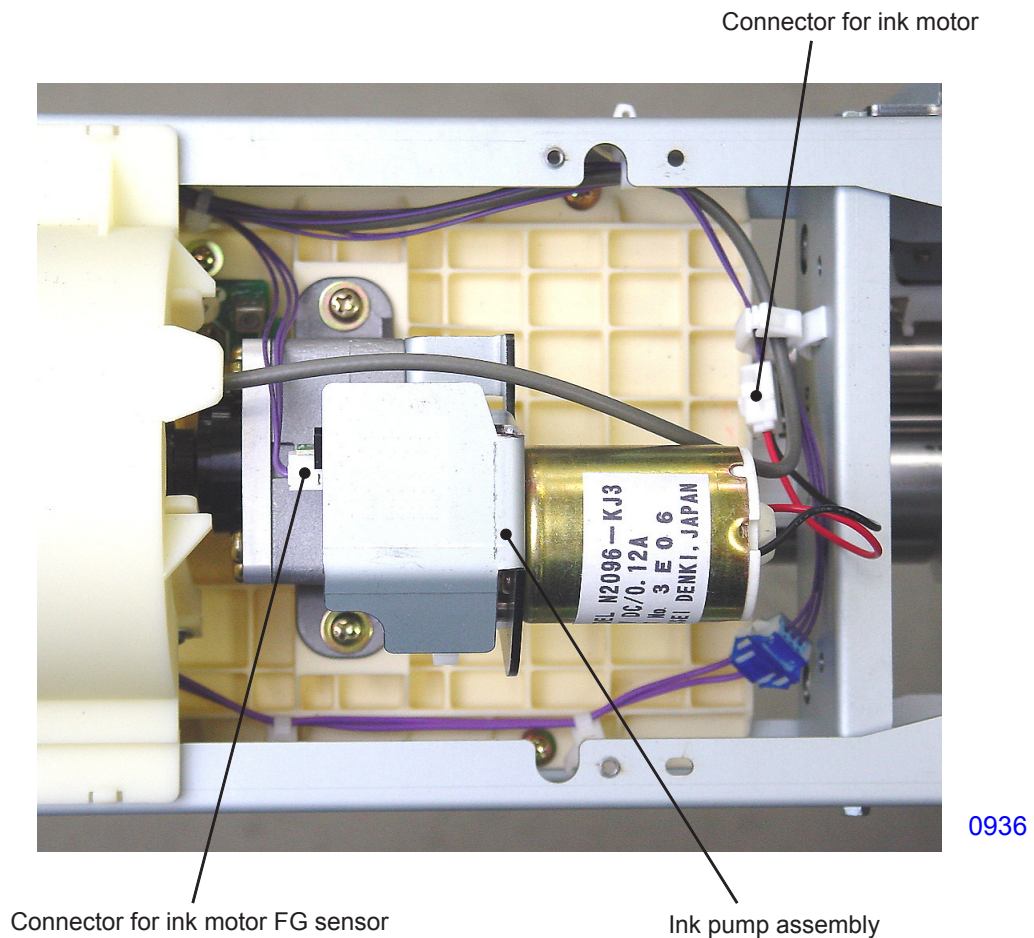
Ink scraper plate F

<< Precautions in installation >>

- The engraved installation position markings for the ink scraper plates on the cross beams are marked by engraved markings for each print drum types. For the A3 machine, install the ink scraper plates at the locations marked <A3>. For the B4 machine, install at the locations marked <B4>.

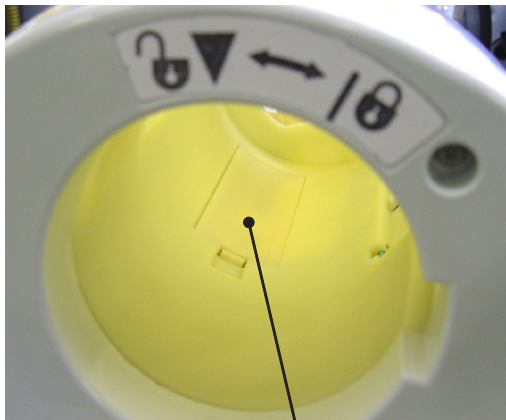
6. Removing the Ink Pump Assembly

- (1) Perform the Confidential operation and remove the print drum out of the machine.
- (2) Remove the following parts:
 - Screen assembly
 - Clamp plate base assembly
 - Print drum body
- (3) Unplug the connector for the ink motor FG sensor and the connector for the ink motor, remove the mounting screws (with double-washer, M4 x 8, 2 pcs), and dismount the ink pump assembly.



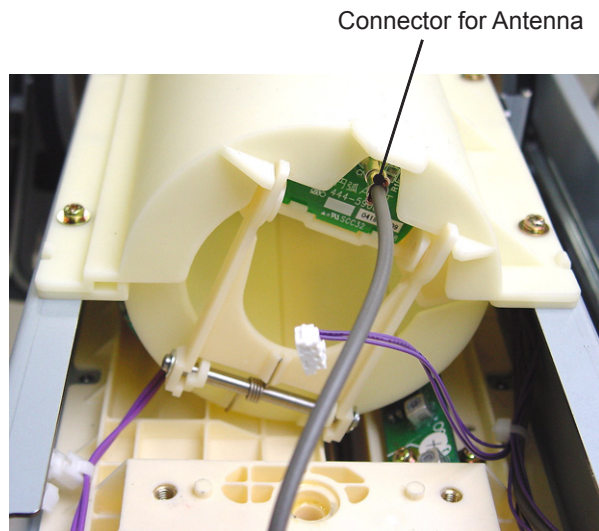
7. Removing the Ink Cartridge Guide Assembly

- (1) Perform the Confidential operation and remove the print drum out of the machine.
- (2) Remove the following parts:
 - Screen assembly
 - Clamp plate base assembly
 - Print drum body
 - Ink pump assembly
- (3) Remove the inspection cap.
- (4) Unplug the connector for the Antenna and the connector for the ink cartridge set switch. Remove the two reusable bands.
- (5) Remove the mounting screws (with double-washer, M3 x 8, 4 pcs), slide the ink cartridge guide assembly toward the inside, and lift up to remove.

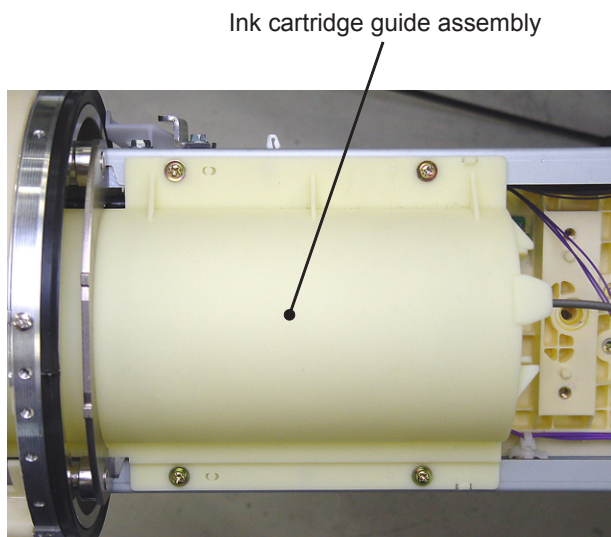


0937

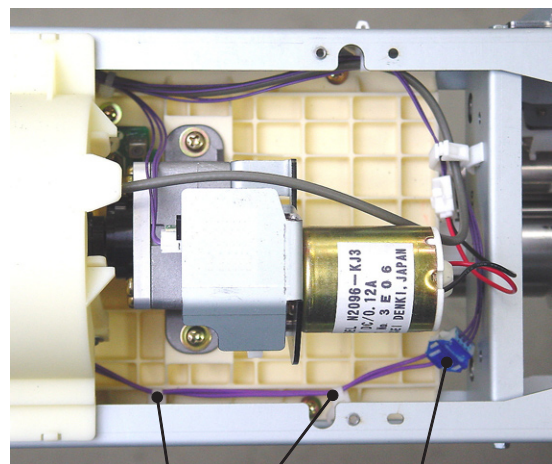
Inspection cap



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0939



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Reusable bands

Connector for ink cartridge set SW

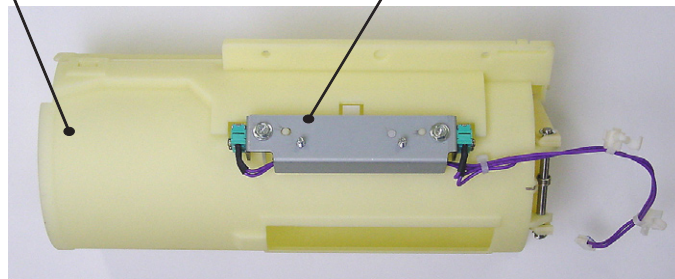
8. Removing the Ink Cartridge Lock Assembly and TAG Antenna

- (1) Perform the Confidential operation and remove the print drum out of the machine.
- (2) Remove the following parts:
 - Screen assembly
 - Clamp plate base assembly
 - Print drum body
 - Ink pump assembly
 - Ink cartridge guide assembly

Removing the ink cartridge lock assembly

- (3) Remove the mounting screws (RS tight, M3 x 8, 2 pcs) and dismount the ink cartridge lock assembly from the ink cartridge guide assembly.

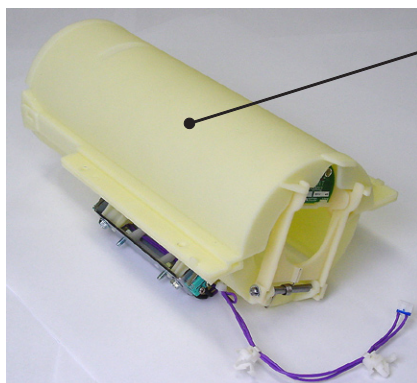
Ink cartridge guide assembly Ink cartridge lock assembly



0941

Removing the TAG Antenna

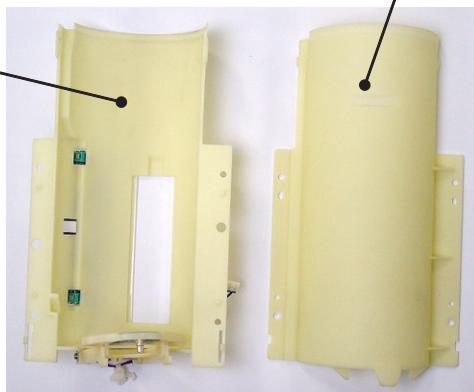
- (3) Remove the upper ink cartridge guide from the lower ink cartridge guide by disengaging the latch.
- (4) Remove the Antenna from the Antenna holder by disengaging the latch.



0942

Ink cartridge guide assembly

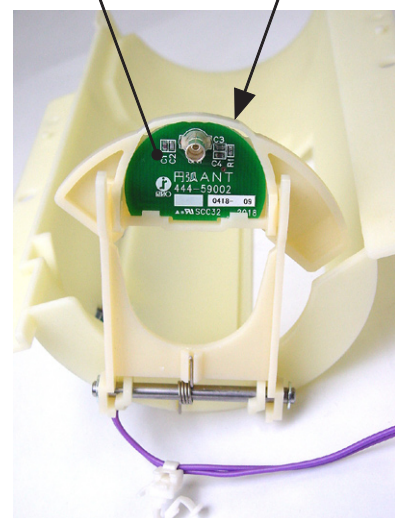
Lower ink cartridge guide



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Upper ink cartridge guide

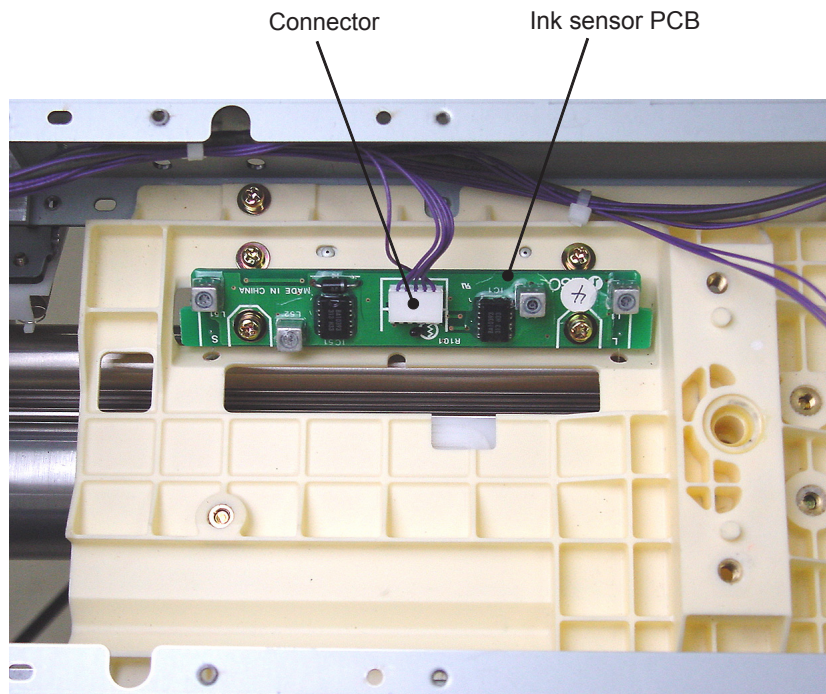
Antenna Antenna holder



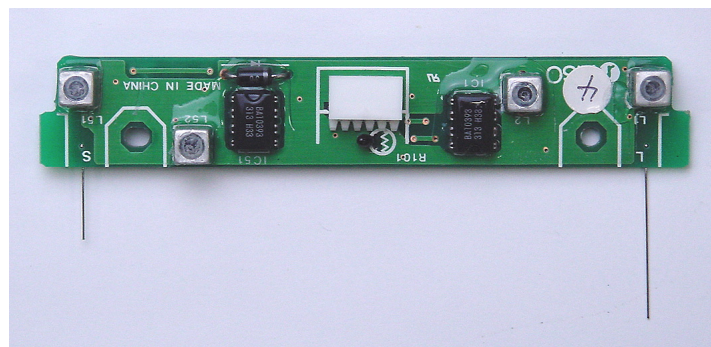
0944

9. Removing the Ink Sensor PCB

- (1) Perform the Confidential operation and remove the print drum out of the machine.
- (2) Remove the following parts:
 - Screen assembly
 - Clamp plate base assembly
 - Print drum body
 - Ink pump assembly
 - Ink cartridge guide assembly
- (3) Unplug the connector, remove the mounting screws (with double-washer, M3 x 8, 2 pcs), and dismount the ink sensor PCB.



0945

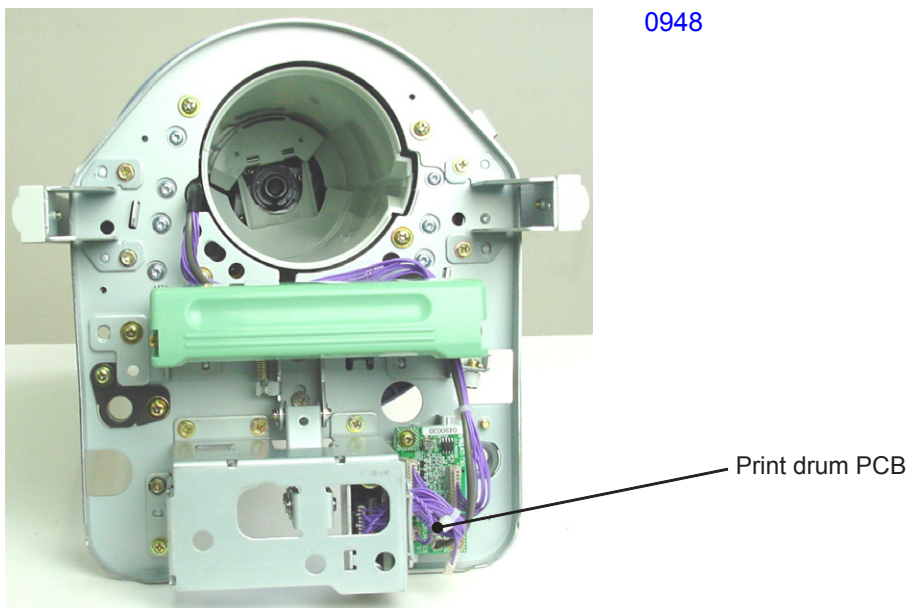
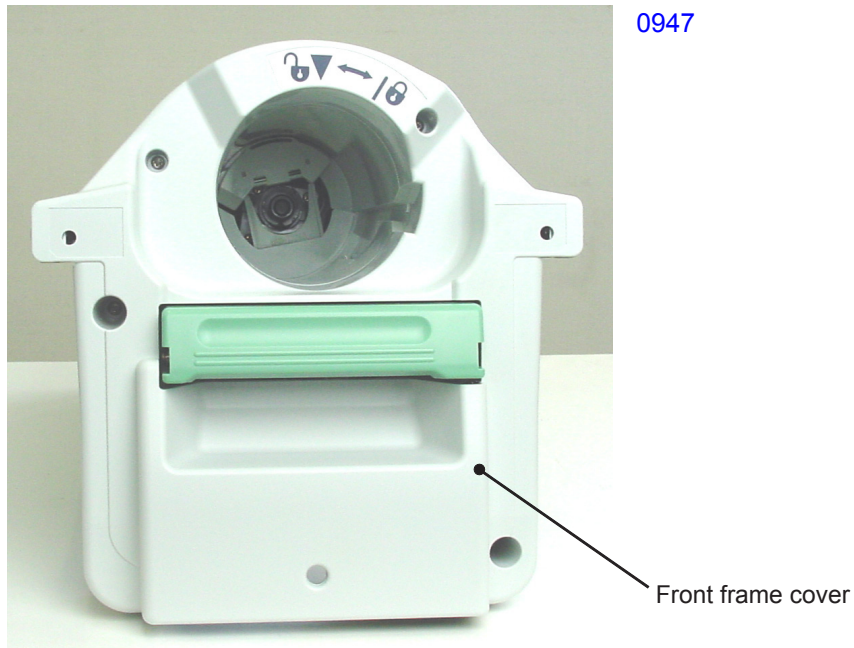


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<< Ink sensor PCB >>

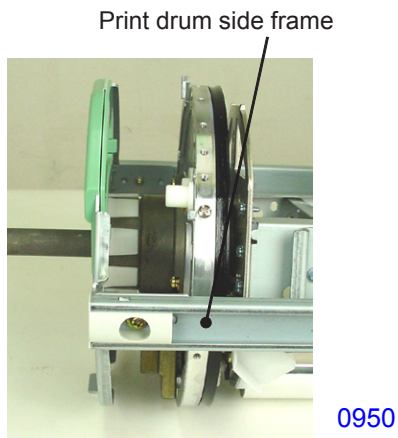
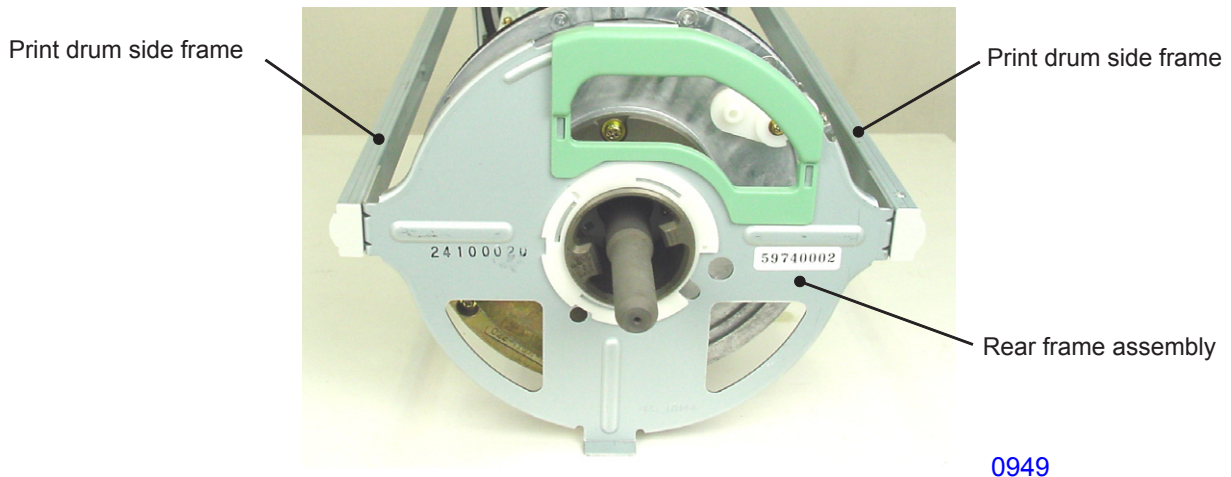
10. Removing the Print Drum PCB

- (1) Remove the print drum out of the machine, and remove the front frame cover. (screws: M3 x 6, 4 pcs)
 - (2) Unplug the connectors (6 locations), remove the mounting screws (with double-washer, M3 x 8, 2 pcs), and dismount the print drum PCB.
- * Before replacing the print drum PCB, read the precautions described in Chapter 18.

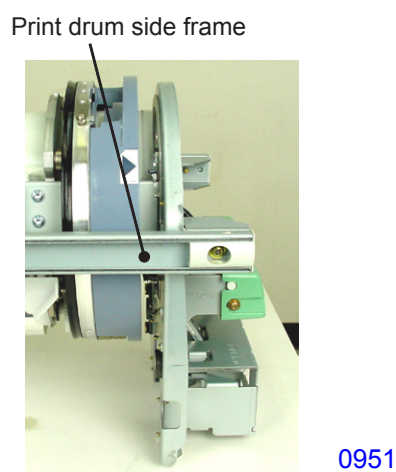


11. Removing the Print Drum Joint

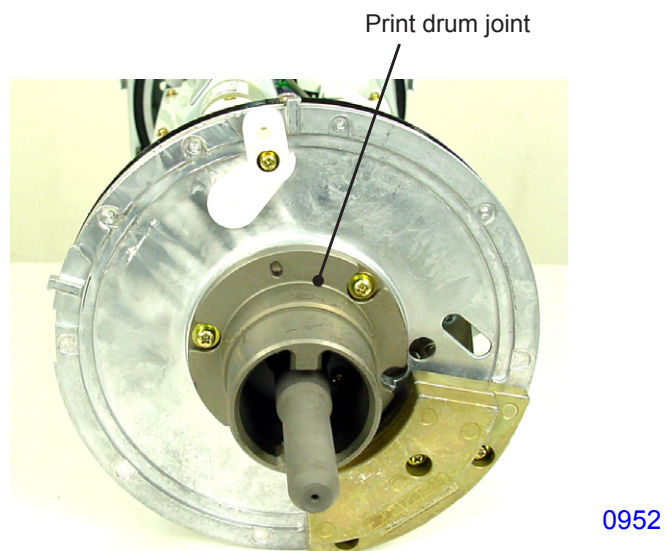
- (1) Remove the print drum out of the machine.
- (2) Remove the print drum side frames from both sides. (with double-washer, M4 x 8, 2 pcs each)
- (3) Remove the rear frame assembly.
- (4) Remove the mounting screws (with double-washer, M4 x 8, 3 pcs) and dismount the print drum joint.



<< Rear side >>

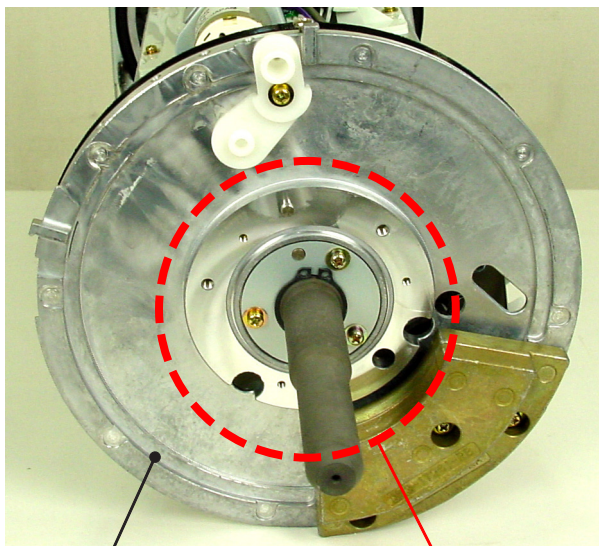


<< Front side >>



12. Removing Flange R

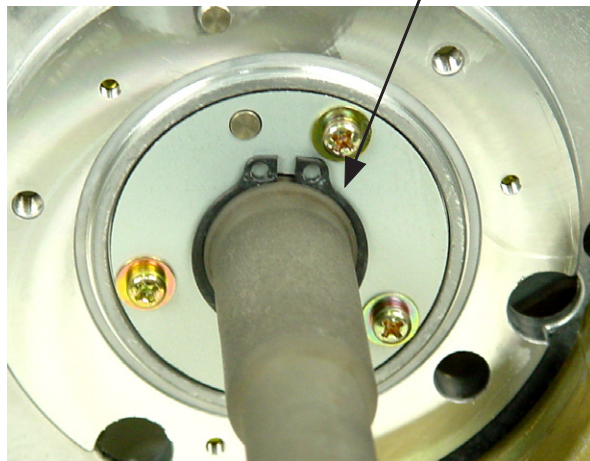
- (1) Perform the Confidential operation and remove the print drum out of the machine.
- (2) Remove the following parts:
 - Screen assembly
 - Clamp plate base assembly
 - Print drum body
 - Print drum side frames (2 pcs)
 - Rear frame assembly
 - Print drum joint
- (3) Detach the C-ring and remove flange R.



0953

Flange R

C-ring

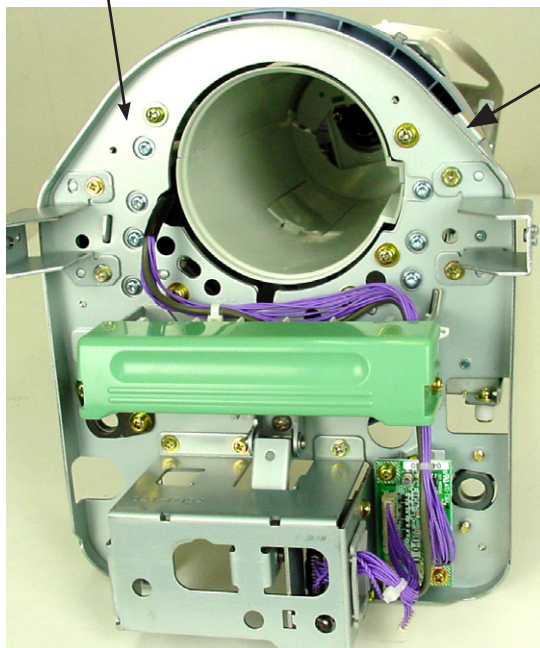


0954

13. Removing flange F

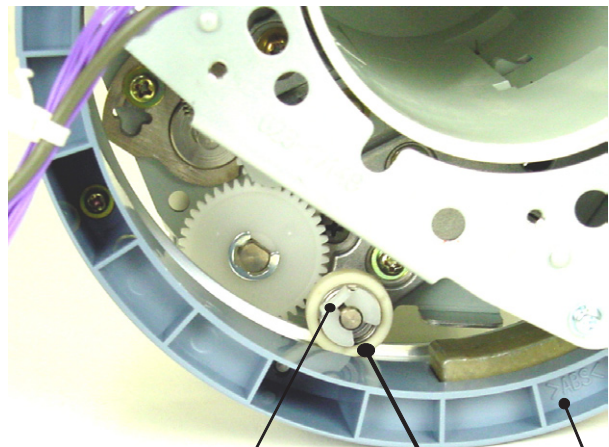
- (1) Perform the Confidential operation and remove the print drum out of the machine.
 - (2) Remove the following parts:
 - Screen assembly
 - Clamp plate base assembly
 - Print drum body
 - Print drum side frames (2 pcs)
 - (3) Unplug the connectors (2 locations), detach the reusable band, remove the mounting screws (with double-washer, M4 x 8, 5 pcs), and dismount the front frame assembly.
 - (4) Remove the snap ring from the flange roller at the lower side and dismount one flange roller.
 - (5) Remove flange F.
- * The remaining flange rollers can be removed after flange F is dismounted.

Front frame assembly



0955

Position-B lock lever



0956

Snap ring

Flange roller

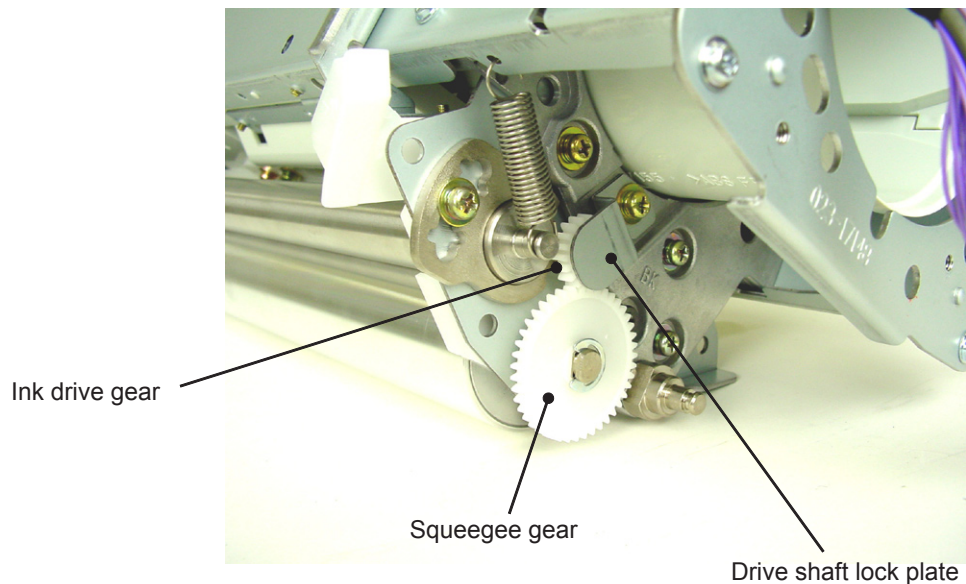
Flange F

<< Precautions in installation >>

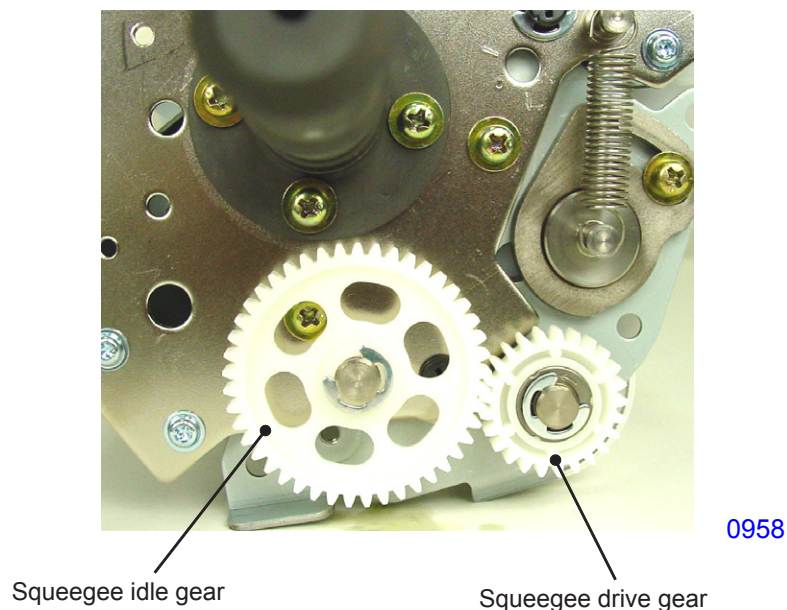
- Before installing the front frame assembly, push the position-B lock lever so that the tip of the position-B lock lever stays away from flange F to prevent it from hooking into flange F in the wrong position.

14. Removing the Squeegee Roller

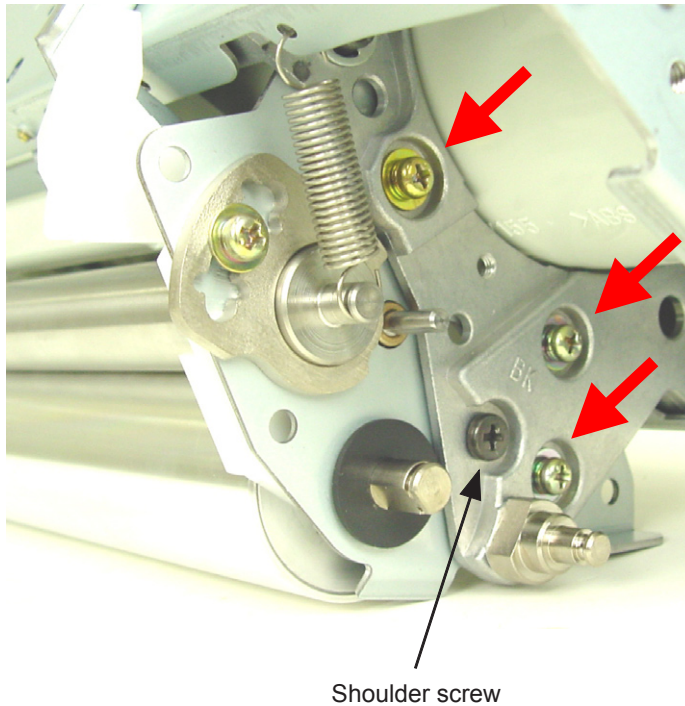
- (1) Perform the Confidential operation and remove the print drum out of the machine.
- (2) Remove the following parts:
 - Screen assembly
 - Print drum body
 - Print drum side frames (2 pcs)
 - Print drum joint
 - Front frame assembly
 - Clamp plate base assembly
 - Front frame cover
 - Rear frame assembly
 - Flange R
 - Flange F
- (3) Remove the drive shaft lock plate. (with double-washer, M4 x 8, 1 pc)
- (4) Remove the ink drive gear.
- (5) Remove the E-ring and dismount the squeegee gear.



- (6) Remove the E-ring and dismount the squeegee idle gear.
- (7) Remove the E-ring and dismount the squeegee drive gear.

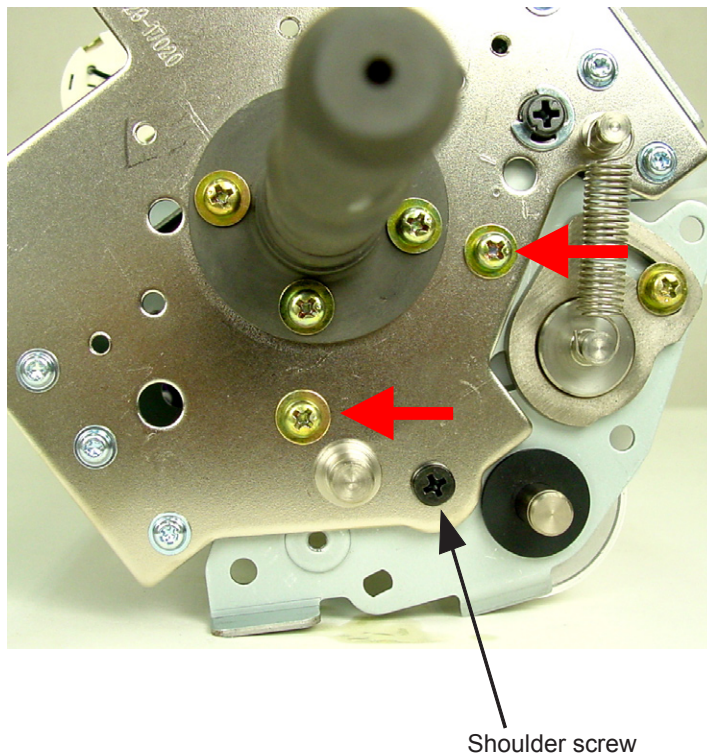


- (8) Remove three mounting screws (with double-washer, M4 x 8) and one shoulder screw from the front side.



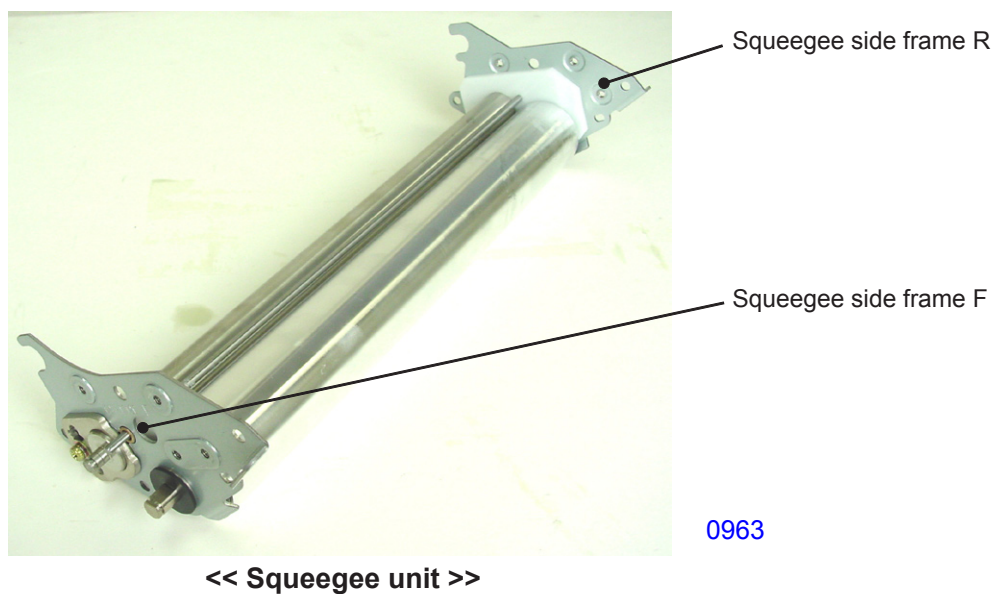
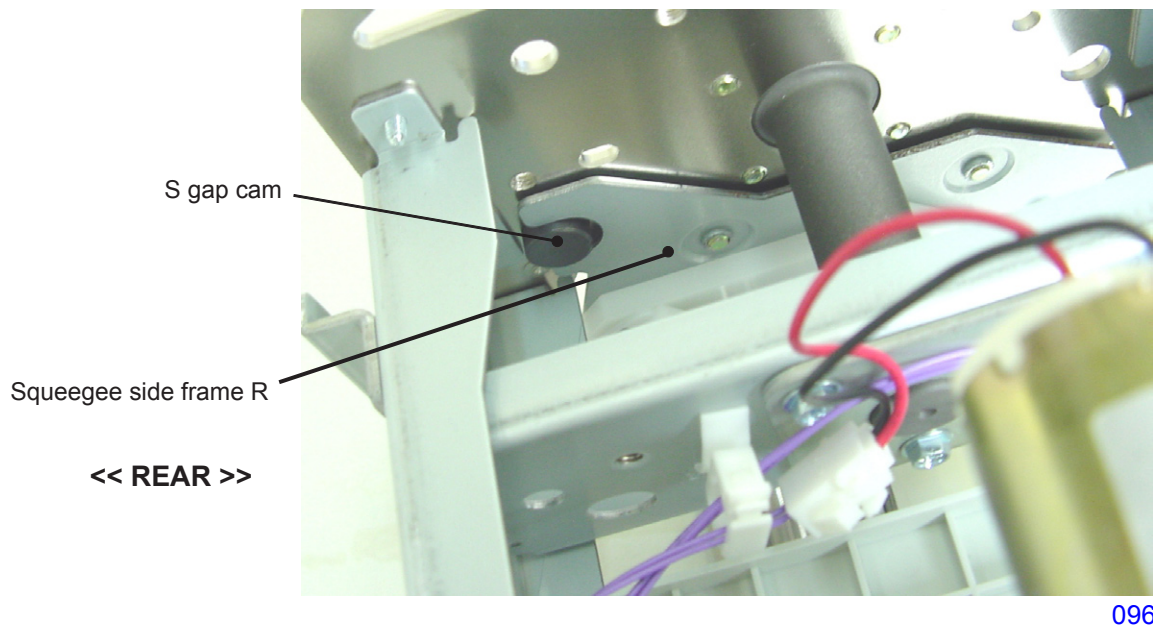
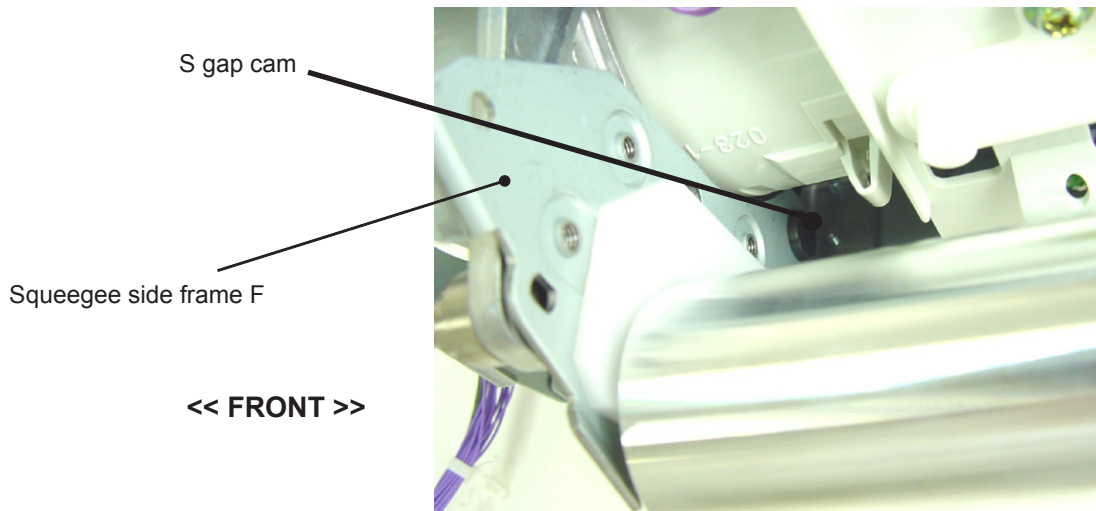
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- (9) Remove two mounting screws (with double-washer, M4 x 8) and one shoulder screw from the rear side.



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- (10) Disengage the squeegee side frames from the S gap cams on the front and rear sides and dismount the squeegee unit.

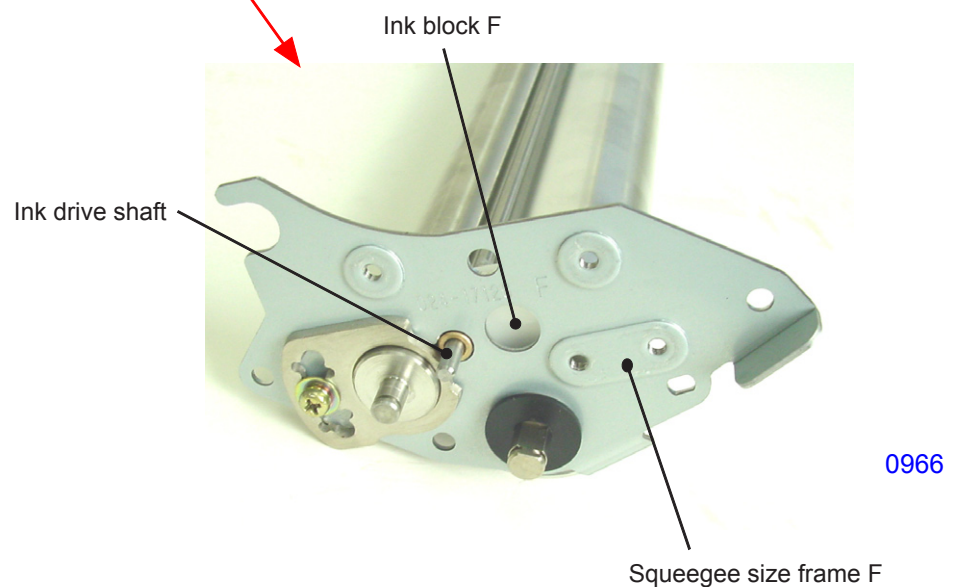
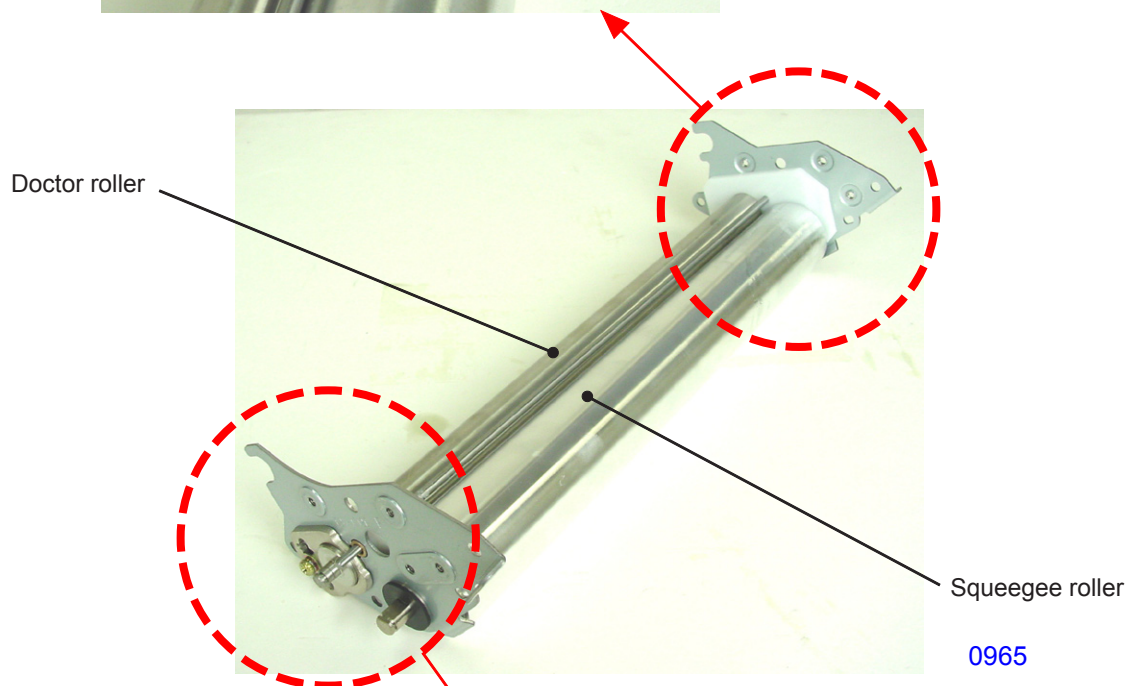
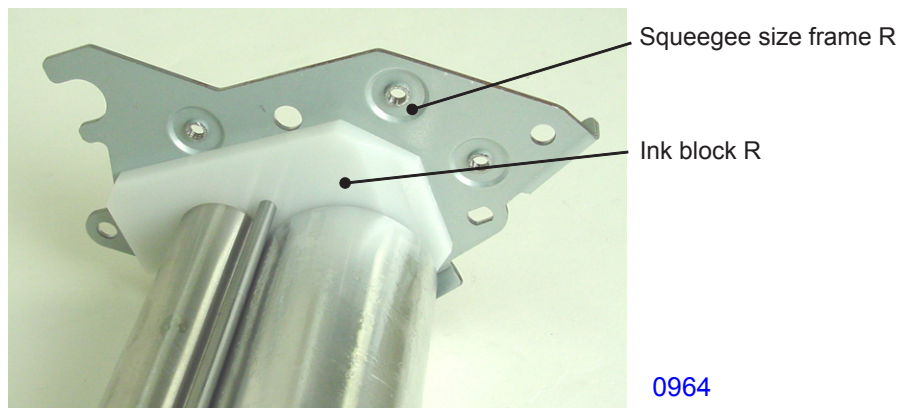


(11) Pull out the ink drive shaft.

* Be careful to avoid misplacing the bearing metal and O-ring, which are removed at the same time.

(12) Remove squeegee side frame F and squeegee side frame R and dismount the squeegee roller.

* Note that the doctor roller, ink block F, and ink block R are also removed while assembled as a unit.

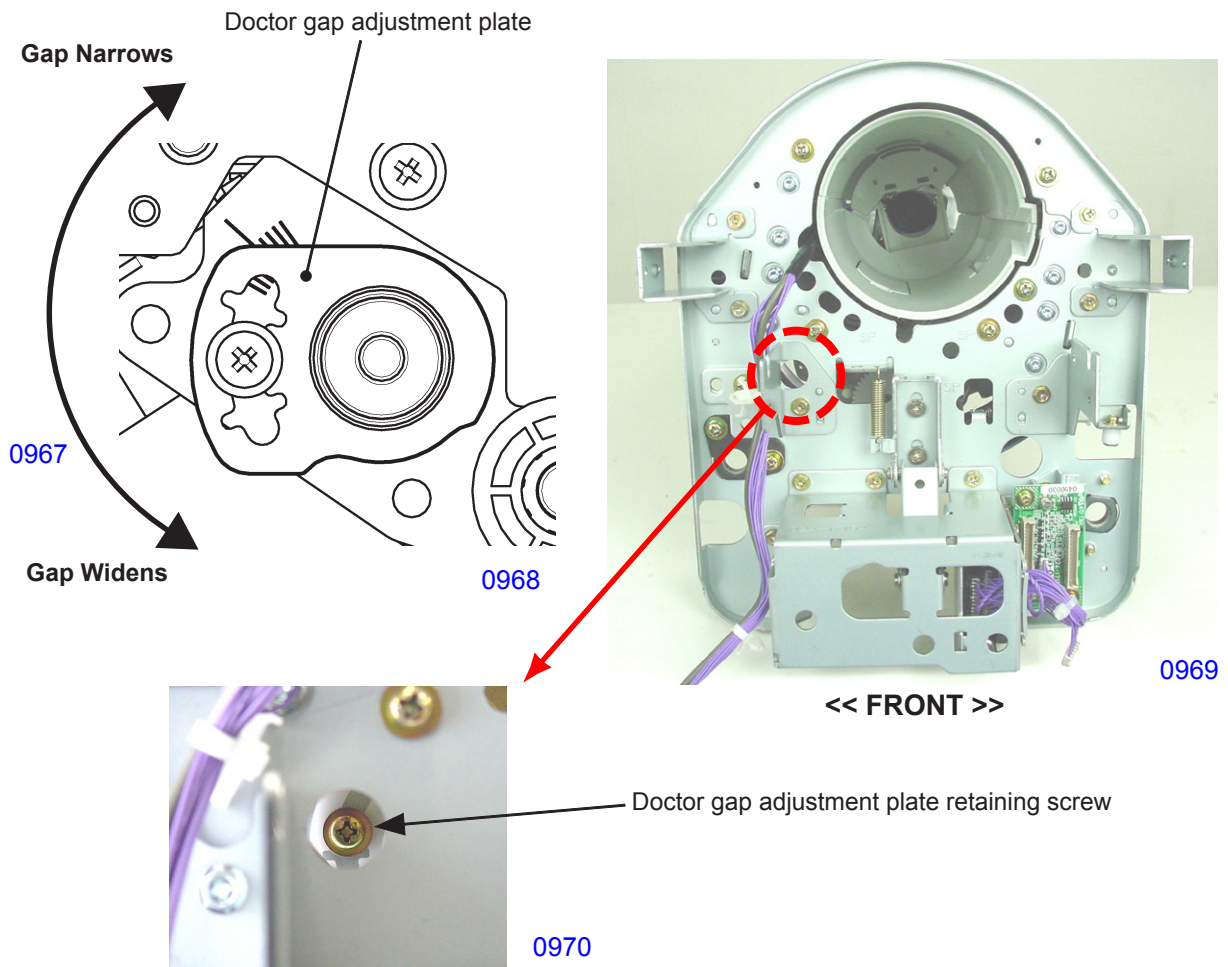


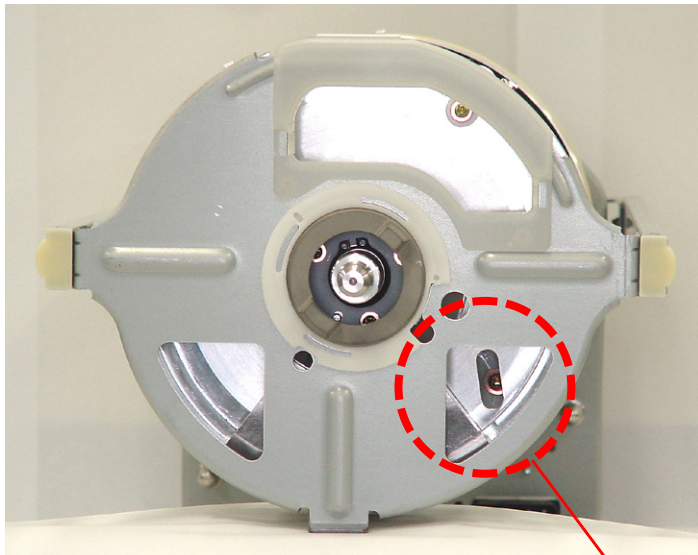
Adjustment

1. Squeegee Gap Adjustment

Checks and adjustment procedures

- (1) Remove the print drum out of the machine and remove the following parts from the print drum:
 - Screen assembly
 - Print drum body
 - Front frame cover
 - Print drum handle cover
 - Print drum lever
- (2) Clean out the ink from the squeegee unit.
- (3) Using a feeler gauge, check to confirm that the gap between the squeegee roller and the doctor roller conforms to the following specified value.
 - * Specified value (same on front and rear): $0.08 \text{ mm} \pm 0.02 \text{ mm}$
- (4) If the measured gap deviates from the specified value, loosen the retaining screw on the doctor gap adjustment plate.
- (5) Insert a flat-head screwdriver into the groove on the doctor gap adjustment plate and move the plate to adjust the gap.
- (6) Tighten the retaining screw on the doctor gap adjustment plate.



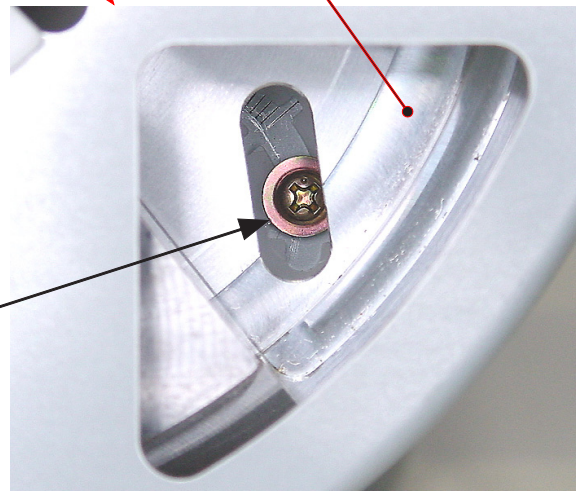


<< REAR >>

0971

Flange R

Doctor gap adjustment plate retaining screw



0972

Problems

- If the gap between the squeegee roller and the doctor roller is too wide, too much ink will be applied to the print drum, potentially resulting in ink leakage. It may also cause the master to eventually slip out from the clamp plate or tear.
- If the gap between the squeegee roller and the doctor roller is too narrow, the required amount of ink will not be applied to the print drum, causing light print images or partially missing printed images. An excessively narrow gap may also require large number of prints to be made before all the images appear on the prints.

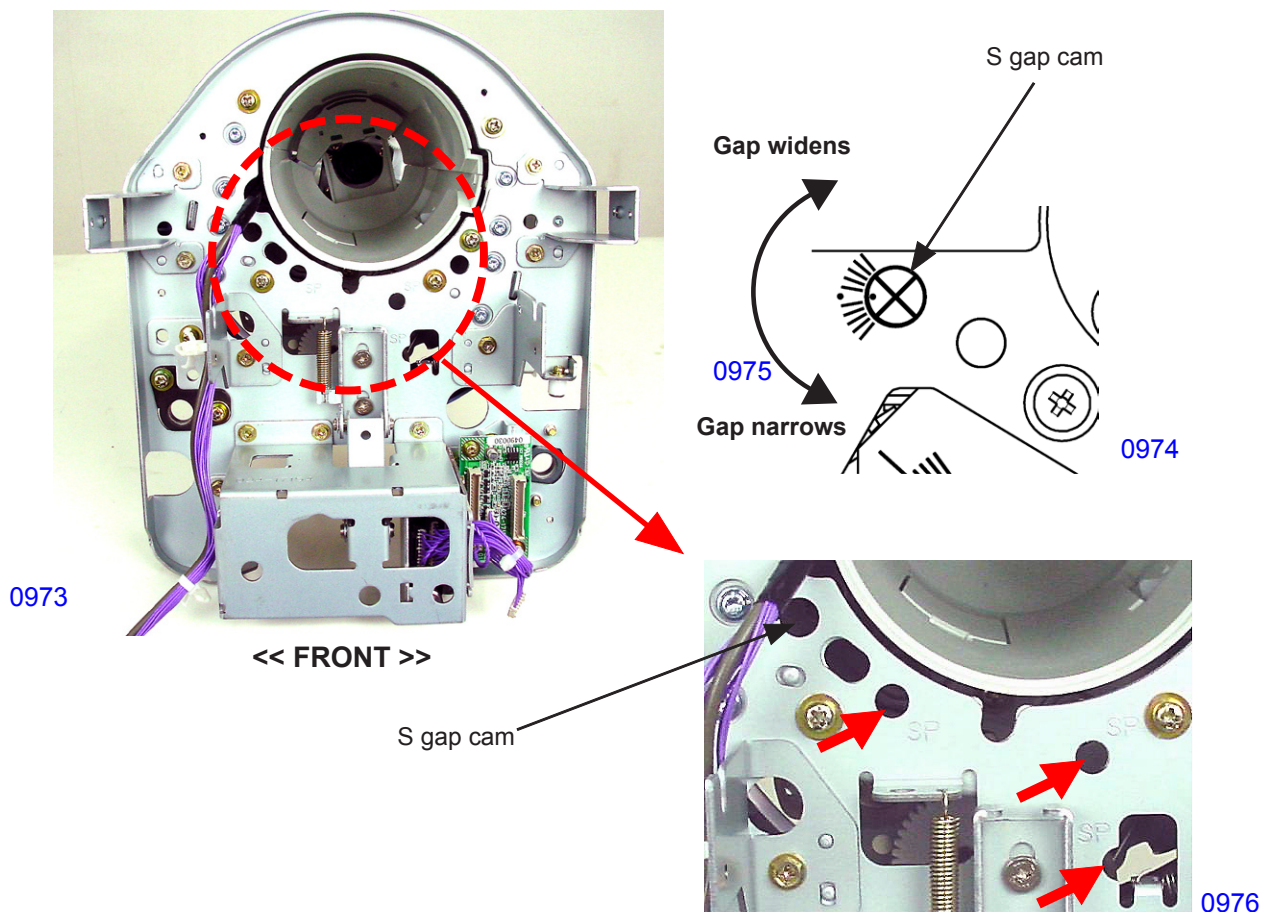
2. Squeegee Pressure Adjustment

Checks and adjustment procedures

- (1) Create a master using Test Chart No. 14 and print. Check the left and right sides of the prints to confirm that the print density is equal on both sides. Also, push on the print drum body immediately below the squeegee roller with a finger to confirm that the gap between the print drum body and the squeegee roller is at the correct value on both the front and rear of the print drum.
 - (2) If the print density differs between the left and right of the prints or if the gap between the print drum body and the squeegee roller is out of the correct setting, make the adjustment described below.
- * Correct gap dimension throughout the drum: 0.2 mm $\pm$ 0.05 mm for A3 print drum, 0.3 mm $\pm$ 0.05 mm for B4 and A4 size print drums.

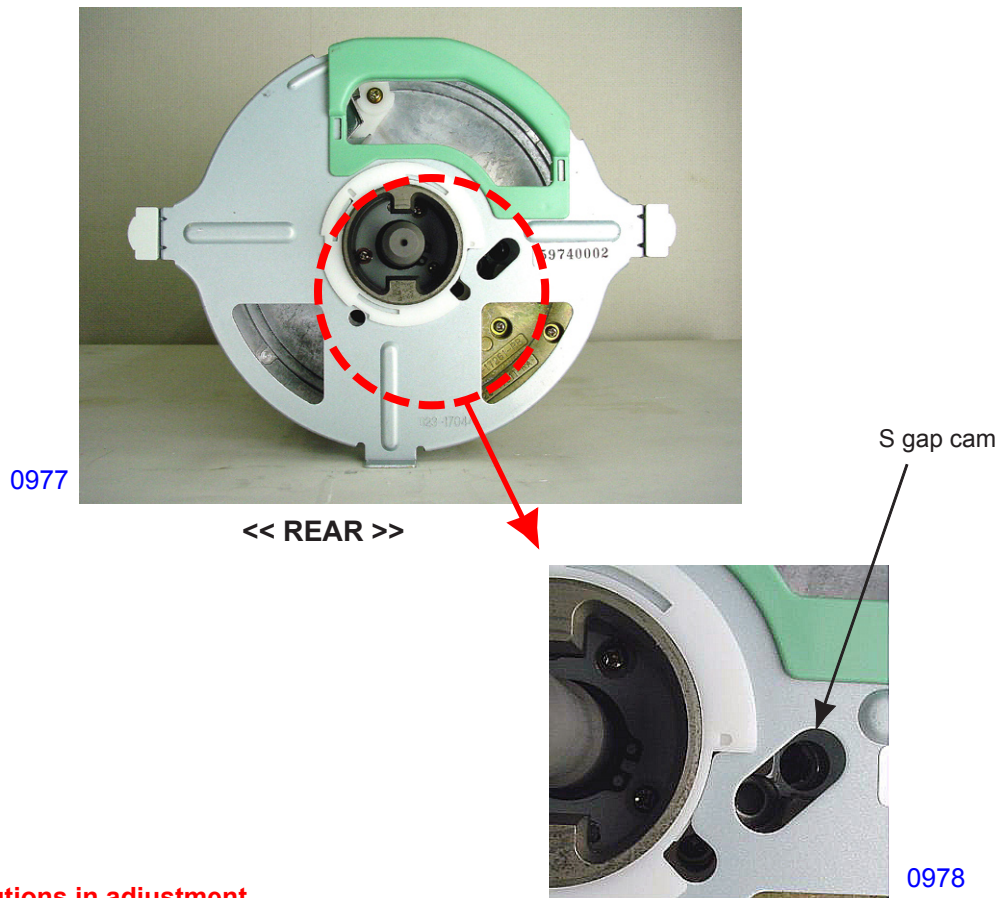
<< Adjustment on the Front >>

- (3) Remove the print drum from the machine and pull out the ink cartridge. Then remove following parts:
 - Front frame cover
 - Print drum handle cover
 - Print drum lever
- (4) Loosen the three retaining screws (indicated by the arrows on the bottom photo) on the squeegee-side frame F assembly through the holes marked <SP> on the print drum front frame.
- (5) Insert a flat-head screwdriver through the hole in the print drum front frame and turn the S gap cam to adjust the gap between the print drum body and the squeegee roller to the specified value.
- (6) After adjusted, tighten the three retaining screws on the squeegee-side frame F assembly.



<< Adjustment on the Rear >>

- (3) Remove the print drum out of the machine.
- (4) Position the holes in print drum rear frame, flange R and squeegee idle gear so that the two retaining screws (indicated by the arrows in the photo) on the squeegee-side frame R assembly can be seen through the holes, then loosen the screws.
- * Rotate the print drum if the holes in the squeegee idle gear are not aligned.
- (5) Insert a flat-head screwdriver through the holes in the print drum rear frame and flange R, then turn the S gap cam to adjust the gap between the print drum body and the squeegee roller to the specified value.
- (6) Tighten the two retaining screws on the squeegee-side frame R assembly.

**Precautions in adjustment**

- If the S gap cam is turned without loosening all the retaining screws, the S gap cam may damage.
Be sure to loosen all retaining screws before making the adjustment.

Possible problems if incorrectly adjusted

- If the squeegee pressure differs between the left and right sides, the print density will become uneven between the left and right sides of the prints.
- If the squeegee pressure is excessive, too much ink will be applied to the print drum, causing potential ink leakage. It may also cause the master to slip from the clamp plate or tear.
- If the squeegee pressure is too weak, the required amount of ink will not be applied to the print drum, causing potential irregularities in printed images, light sections on printed images, or partially missing printed images. Excessively low squeegee pressure may also require numerous trial prints to obtain correctly printed images.

3. Master Position Adjustment

Before making adjustments, clean the pressure roller.

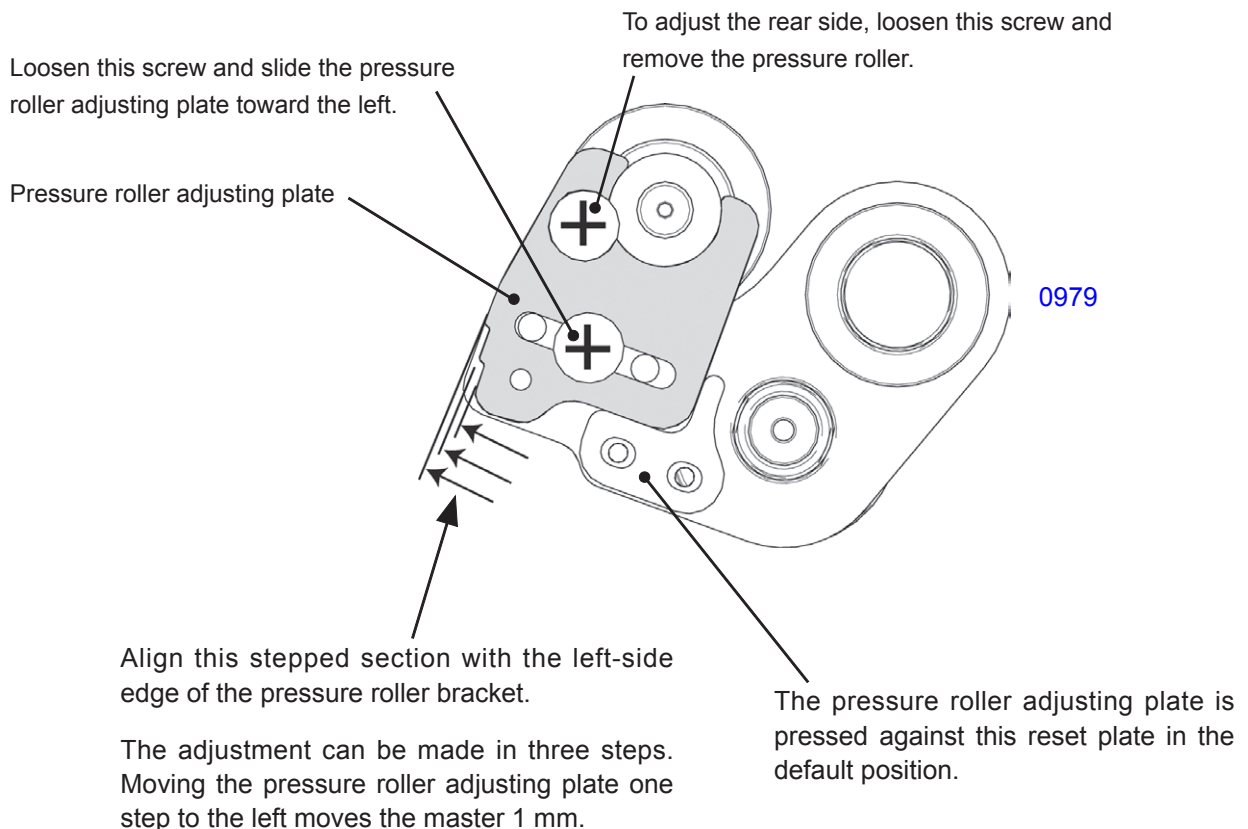
Checks and adjustment procedures

<< To move the master towards the FRONT >>

- (1) Remove the print drum out of the machine and remove the print drum horizontal sliding unit.
 - (2) To move the master toward the front side, loosen the retaining screw on the pressure roller adjusting plate on the front side.
 - (3) Adjust by aligning the increment mark on the left side of the roller adjusting plate to the left edge of the pressure roller bracket.
- * Moving the pressure roller adjusting plate one increment mark to the left to move the master 1 mm toward the front side. The pressure roller adjusting plate can be moved up to two increment marks, which is equal to 2 mm.

<< To move the master towards the REAR >>

- (1) Pull out the print drum.
 - (2) To move the master toward the rear side, loosen the retaining screw on the pressure roller adjusting plate on the rear side.
 - (3) Adjust by aligning the increment mark on the left side of the pressure roller adjusting plate to the left edge of the pressure roller bracket.
- * Moving the roller adjusting plate one increment mark to the left moves the master 1 mm toward the rear side. The roller adjusting plate can be moved up to two increment marks, which is equal to 2 mm.
- * After the above adjustment, adjust the paper ejection suction plate. (See the section on adjustment of the paper ejection section in Chapter 8.)



MEMO

CHAPTER 10: CLAMP UNIT

Contents

Mechanism

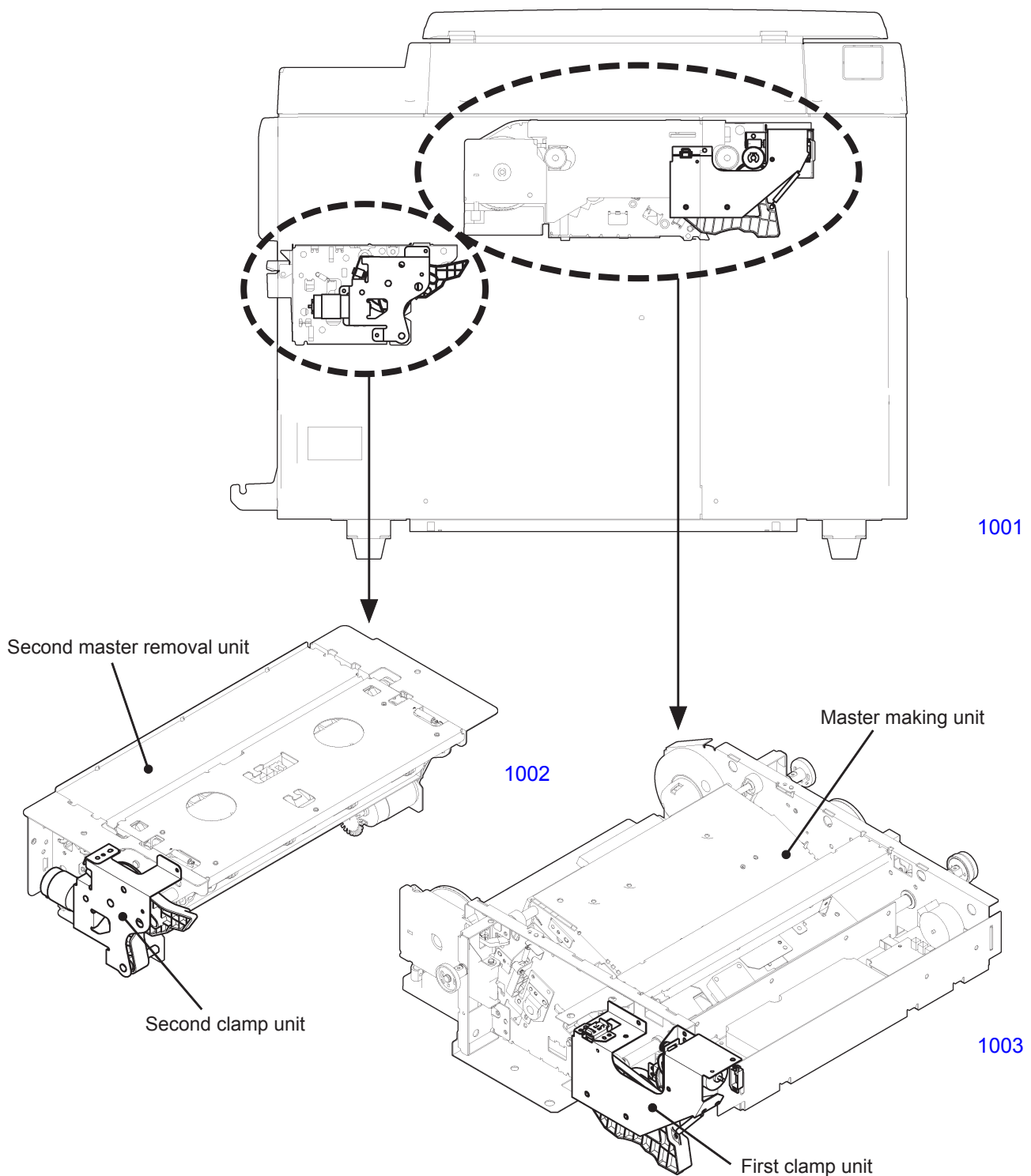
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Mechanism

The machine has two clamp units. The first clamp unit is mounted on the master making unit, while the second clamp unit is installed to the second master removal unit.

The first clamp unit operates when either the first print drum or the second print drum operates for removal or loading of a master. The second clamp unit, however, operates only when the second print drum operates for removal of a master.

When the clamp unit operates, the relevant print drum must be at the horizontal home position.



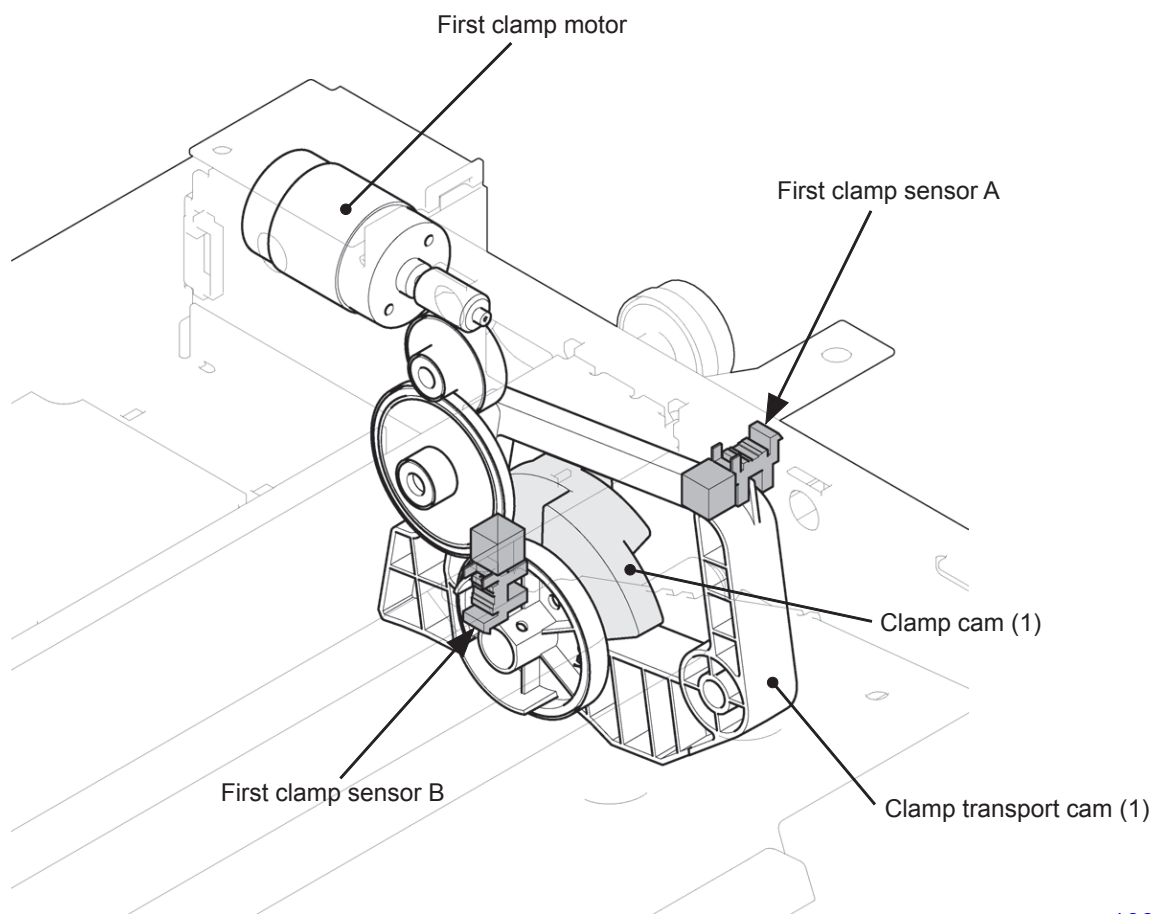
1. Clamp Initializing Operation

<< First clamp unit >>

When the power switch is turned on or when the all-reset operation is initiated, the first clamp unit performs the initializing operation.

Whether the clamp transport cam (1) has returned to the home position (light path of first clamp sensor A blocked, and light received by first clamp sensor B) is checked.

If it is not at the home position, the first clamp motor will turn ON and rotate in the forward or reverse direction depending on the statuses of the first clamp sensors A, B until the light path of the first clamp sensor A is blocked and the light is received by the first clamp sensor B. This motor operation rotates the clamp cam (1) and returns the clamp transport cam (1) to the home position.



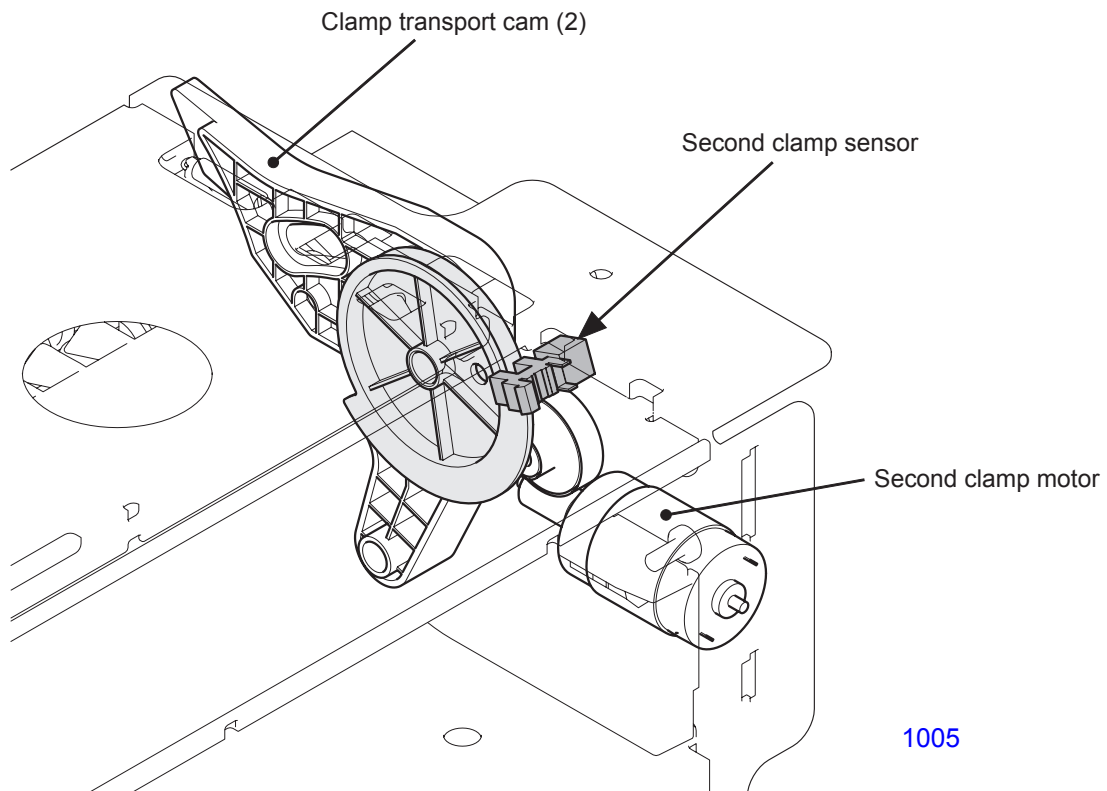
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<< Second clamp unit >>

When the power switch is turned on or when the all-reset operation is initiated, the second clamp unit performs the initializing operation.

When the light path of the second clamp sensor is blocked, the second clamp motor will turn ON and rotates in reverse. When light is received by the second clamp sensor, the second clamp motor starts rotating in the forward direction until the light path is blocked, in order to return the clamp transport cam (2) to the home position.

If light is received by the second clamp sensor, the second clamp motor will turn ON and rotate in the forward direction until the light path is blocked in order to return the clamp transport cam (2) to the home position.

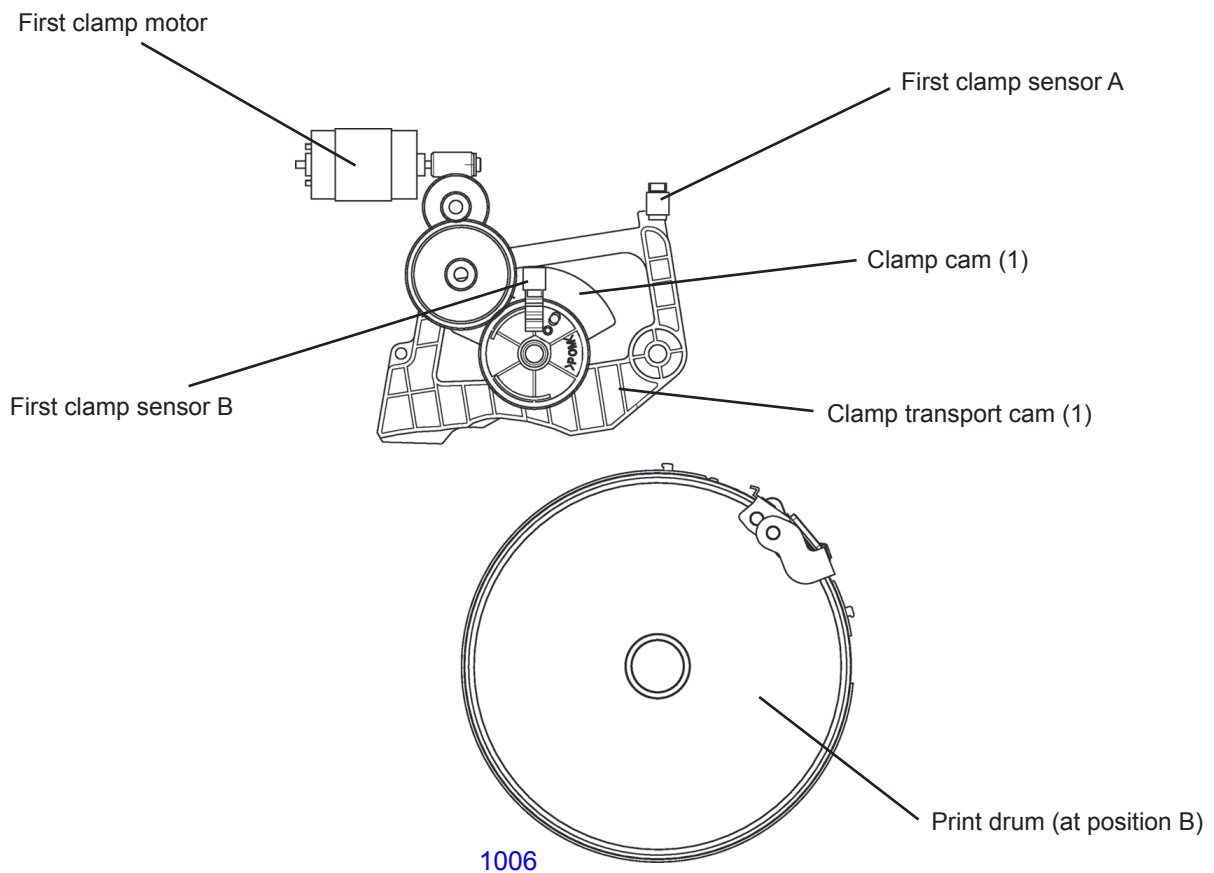


2. Clamp Plate Opening Operation (First Clamp Unit)

When the Start key is pressed for Confidential or master-making operation, the print drum starts to rotate from position B. After the presence of a master on the print drum is checked and as the print drum returns to position B, the print drum stops and the clamp plate opening operation starts.

The first clamp motor will turn ON and rotate the clamp cam (1) and lowers the clamp transport cam (1) until the light path of the first clamp sensor B is blocked.

Then, the print drum starts rotating for master making operation. The clamp transport cam (1) at its lowered position opens the clamp plate first, then lifts the master ejection plate to remove the master from the clamp plate.



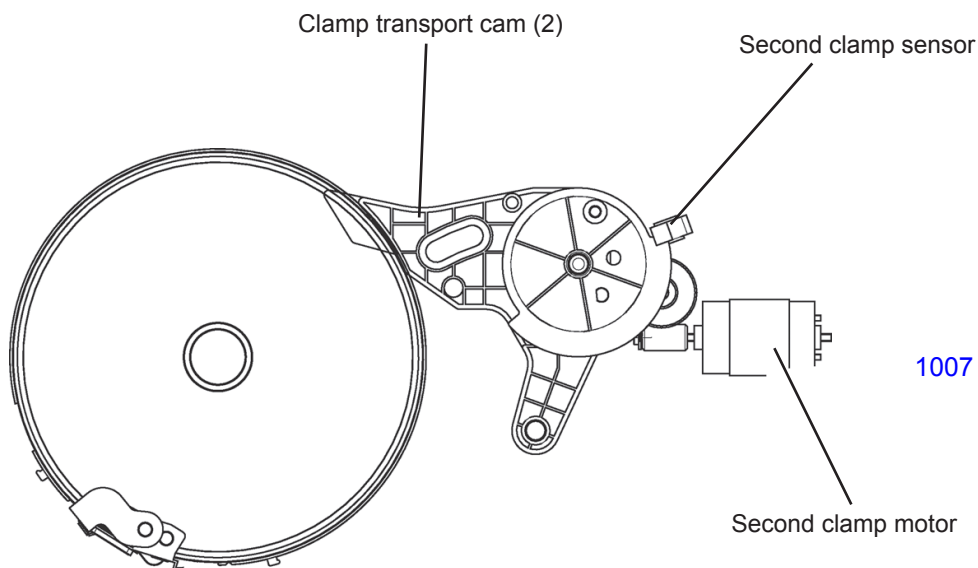
3. Master Ejection Plate Opening Operation (Second Clamp Unit)

When the second print drum ejects the master, the second print drum rotates to an angle of 129° during the clamp plate opening operation. This action disengages the leading edge of the master from the clamp plate. After the first clamp unit returns to the home position, the second print drum rotates in reverse to an angle of 344° .

At that position, the second clamp unit performs the master ejection plate opening operation.

The second clamp motor will turn ON and rotate the clamp cam (2) and move the clamp transport cam (2) to the print drum side until light is received by the second clamp sensor.

Then, the print drum starts rotating for master making operation. The clamp transport cam (2) at a position close to the print drum lifts the master ejection plate to further raise the leading edge of the master that has been disengaged from the clamp plate.

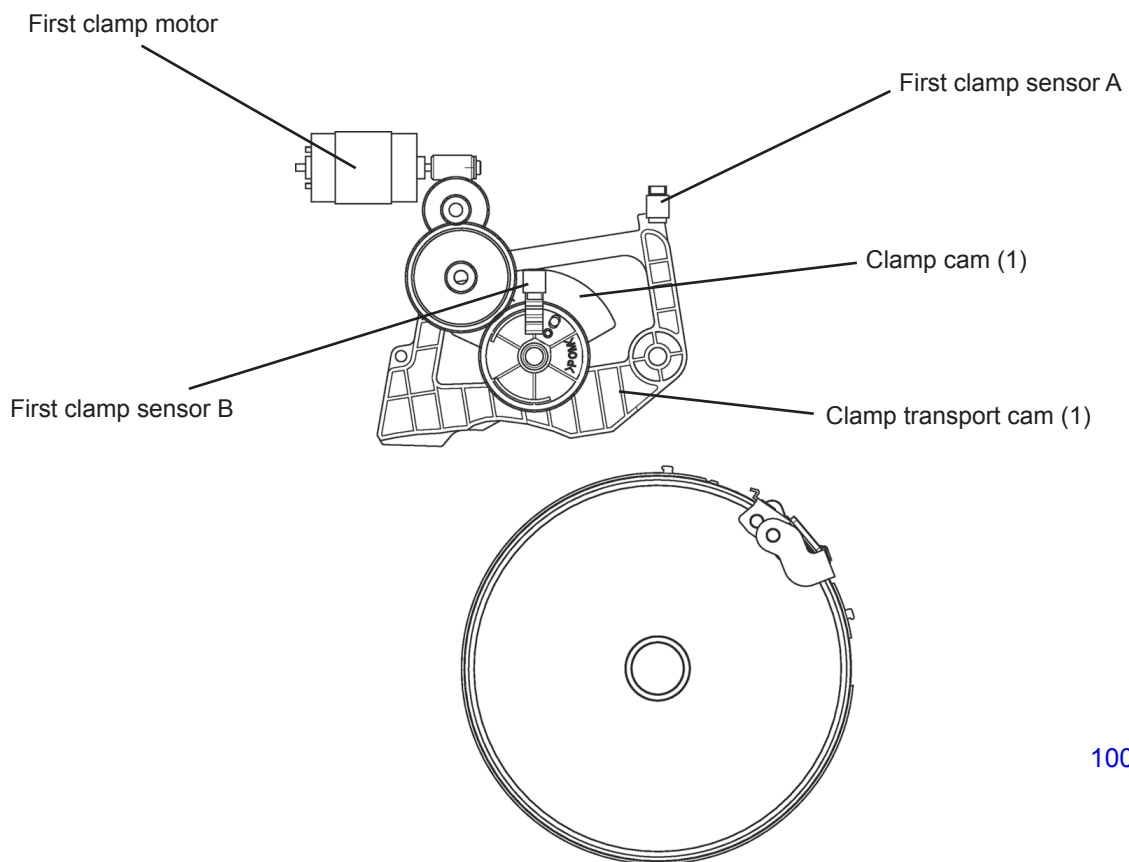


4. Clamp Plate Closing Operation (First Clamp Unit)

When the print drum rotates one full turn and returns to position A while conducting the removed master vertical transport operation, the clamp plate opens because the clamp transport cam (1) is at its lowered position, and the print drum stops.

In the master loading operation, when the load pulse motor feeds the master onto the print drum for a set length, the first clamp motor will turn ON and rotate the clamp cam (1) until the light path of the first clamp sensor A is blocked and light is received by the first clamp sensor B. This action closes the clamp and the master becomes clamped.

In this process, the clamp transport cam (1) returns to the home position.



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CHAPTER 11: MASTER REMOVAL SECTION

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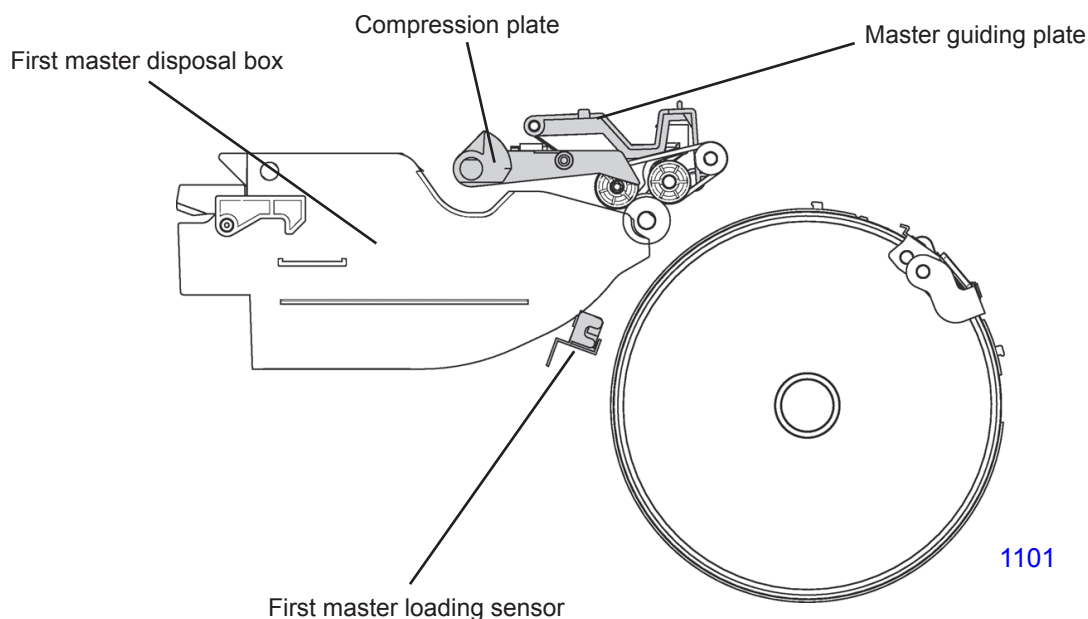
Mechanism

1. Outline of the Master Removal Operation

The master on the print drum is removed from the print drum and ejected in the following sequence.

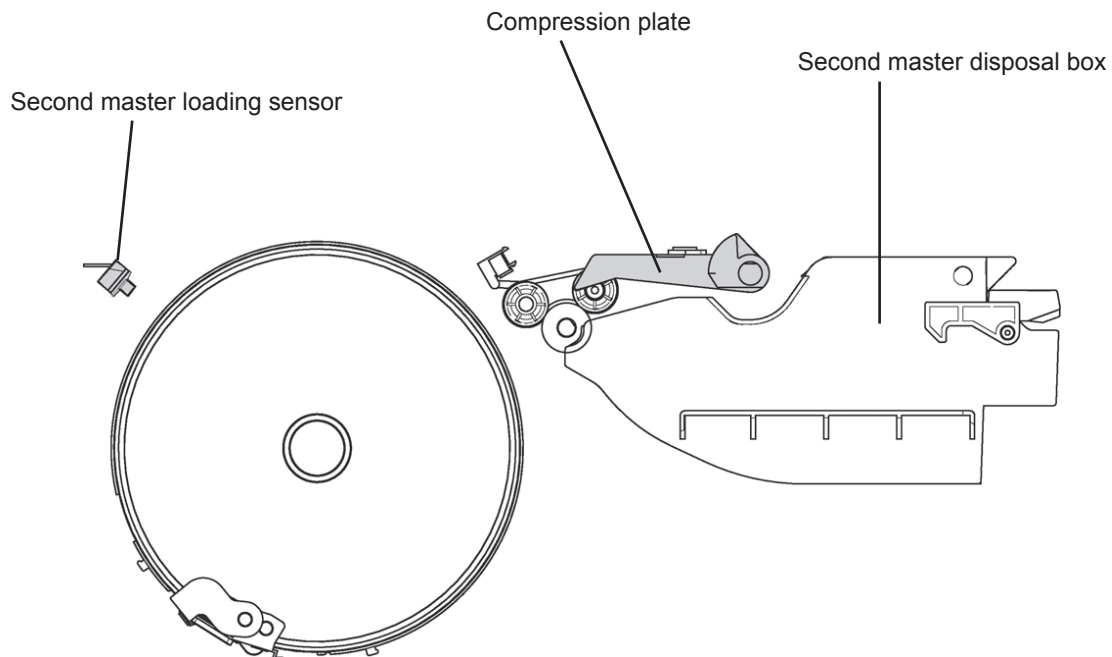
<< First print drum >>

- (1) At the start of the master removal operation, the first master loading sensor checks whether there is a master on the first print drum to be removed.
 - (2) After the presence of the master on the print drum is checked, the first print drum rotates and opens the clamp plate to release the leading edge of the master, then lifts the master ejection plate to raise the leading edge of the master out of the clamp plate. This is done by the first clamp unit attached on the master making unit.
 - (3) The master removal movement is conducted to remove the master from the first print drum, and the master is sent into the first master disposal box.
 - (4) The master compression plate compresses the removed master as it enters the master disposal box.
- * The above step (1) is conducted only when the presence of a master on the first print drum is unknown.
 - * Even if no master was detected on the print drum at the start of the master removal action, steps (2) through (4) are conducted. However, the first master disposal jam sensor does not activate during the master removal operation if no master was detected on the print drum before the master removal operation.
 - * Master compressing operation within the master disposal box and the master loading (wrapping) around the print drum is done at the same time.
 - * A master guiding plate is equipped on the first master removal unit. The master guiding plate positions itself up or down depending on the machine movement sequence. The purpose for the master guiding plate is to come down to the lowered position during the master loading onto the print drum to push away the tailing end of the master being wrapped around the print drum away from the master disposal rollers. This is to prevent the ink on the master disposal rollers from transferring onto the tail end of the master being wrapped around the print drum.



<< Second print drum >>

- (1) At the start of the master removal operation, the second master loading sensor checks whether there is a master on the second print drum.
 - (2) After checking for the presence of the master on the print drum, the print drum keeps rotating to the angle of 129° and opens the clamp plate and lifts the master ejection plate to free the leading edge of the master from the clamp plate. This is done by the first clamp unit attached on the master making unit.
 - (3) The first clamp unit returns to the home position, and the second print drum rotates in the reverse direction to the angle of 344°.
 - (4) Before stopping at the angle of 344° degrees, the second master clamp unit on the second master removal unit lifts the master ejection plate to guide the leading edge of the master on the print drum to enter into the second master removal unit.
 - (5) The second print drum, after the leading edge of the master enters the second master removal unit, makes a forward rotation to unwrap the master on its surface and let the second master removal unit take the master away, sending the master into the second master disposal box.
 - (6) The master compression operation is conducted to compress the master in the second master disposal box.
- * The above step (1) is conducted only when the presence of a master on the second print drum is unknown.
- * Even if there is no master on the second print drum, steps (2) through (6) are conducted. However, the second master disposal jam sensor does not activate during the master removal operation if no master was detected on the print drum before the master removal operation.



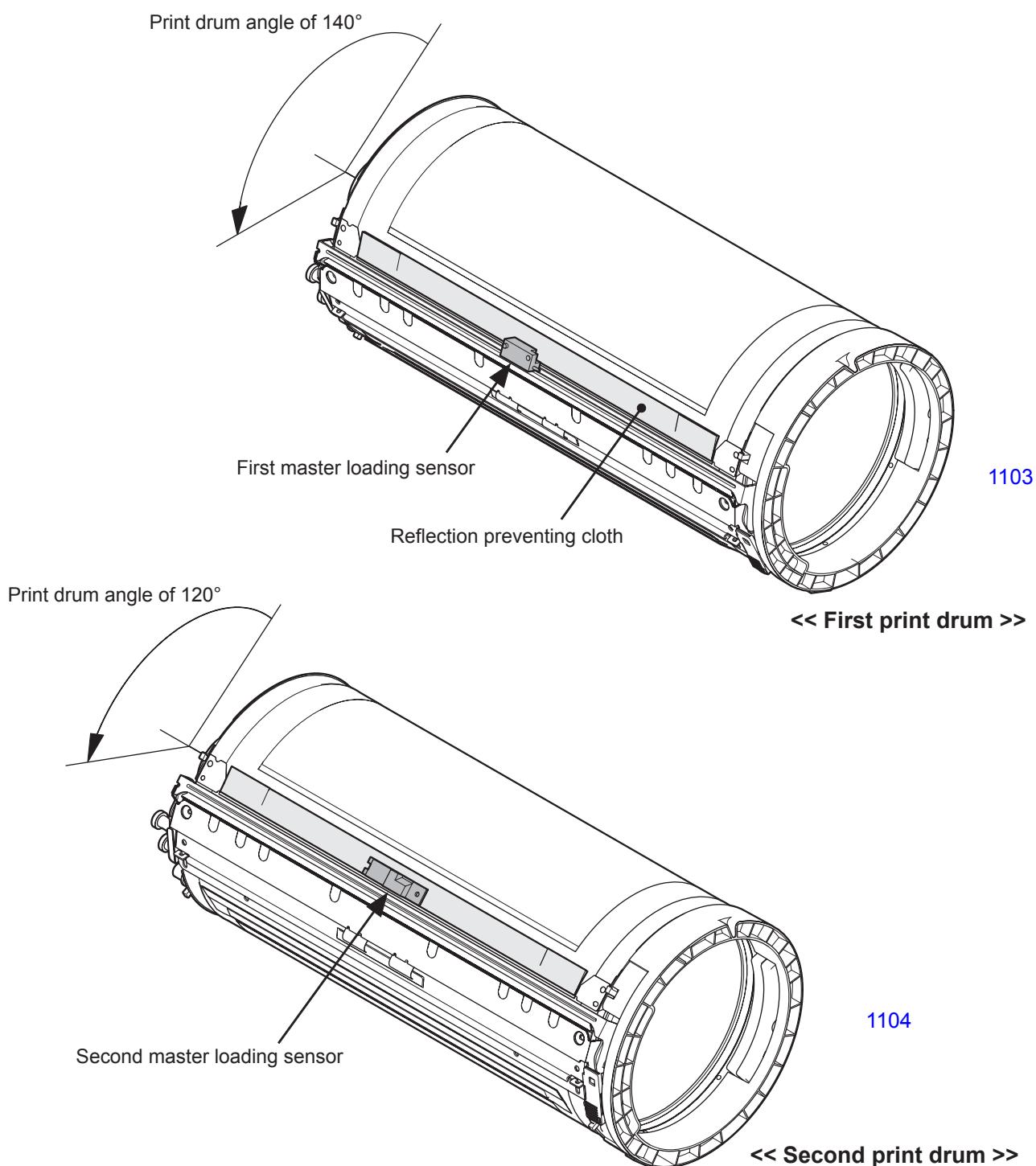
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2. Operation for Checking Master on Print Drum Before Master Removal

At the beginning of master making or Confidential master making, if the machine does not have the information of whether a master exists on the print drum, the machine goes to look for the master on the print drum. The print drum rotates one full turn from position B, and the master loading sensor checks whether there is a master on the print drum at the print drum angle of 140° for the first print drum, and for the second print drum the angle at 120° .

If the machine already knows that there is a master on the print drum, the above checking operation is skipped.

If a master is found on the print drum before the master removal operation, the master disposal jam sensor activates to check for any master disposal jam during the master removal operation.



3. Removed Master Vertical Transport Operation

As soon as the clamp opening operation starts, the master disposal motor activates.

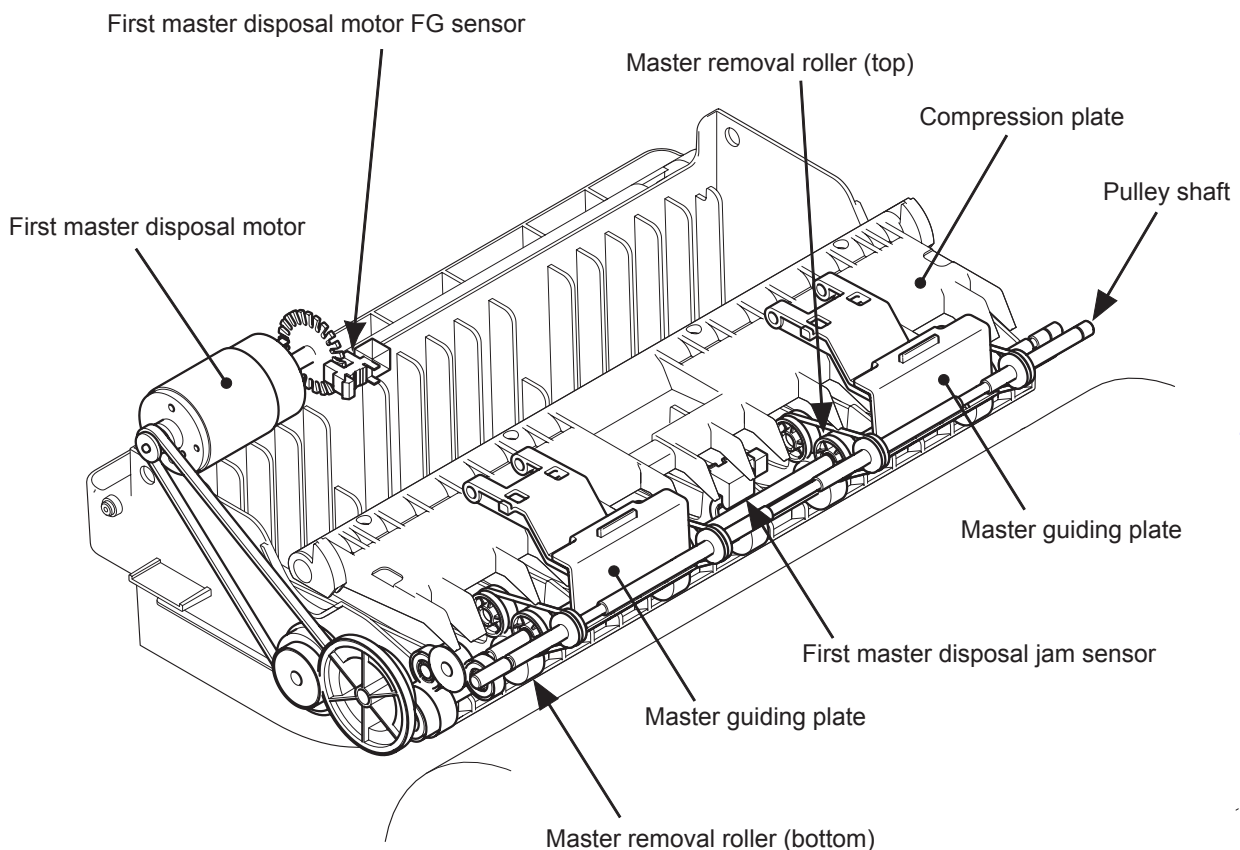
The print drum makes a forward rotation and the leading edge of the master freed from the clamp plate enters into the master removal unit. The print drum keeps rotating in the forward direction and the master on the print drum keeps feeding into the master removal unit.

After the print drum rotates one full turn and reaches back to the position A, the main motor stops and the master disposal motor stops after a short delay according to the set timing.

During the above operation, the master disposal jam sensor checks for the master disposal jam between the print drum and the master disposal box. The master disposal jam sensor is activated at print drum angles of 120 and 180° to check for the jam. During the whole master disposal operation, the master disposal motor FG sensor checks the rotating speed of the master disposal motor. Test Mode No. 578 can be used to adjust the speed of the master disposal motor in relation to the master removal operation print drum speed.

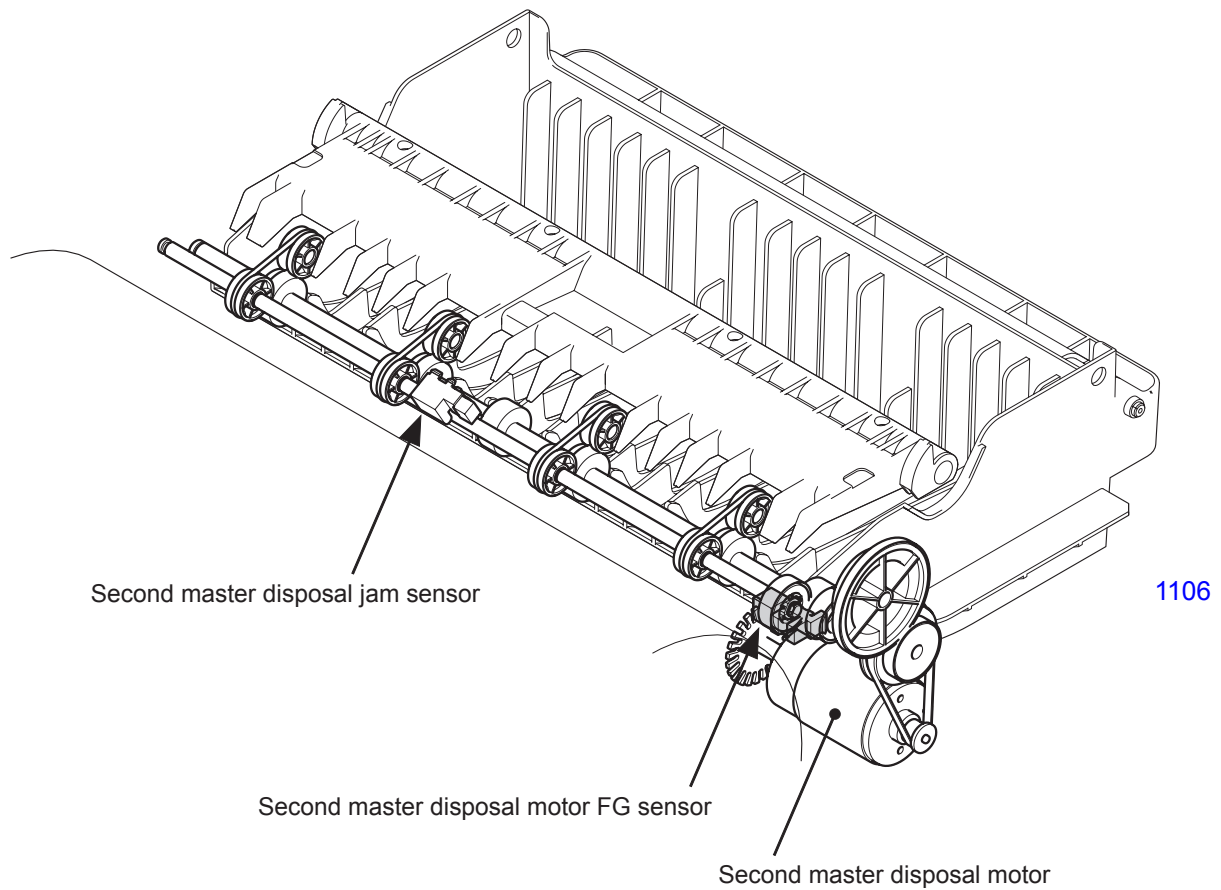
While the master on the print drum is removed and transferred into the master disposal box, the master guide plate on the first master removal unit is supported in the raised position by the master compression plate to prevent any interference on the removed master entering into the master disposal box.

<< First master removal unit >>



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<< Second master removal unit >>



4. Disposed Master Compression Operation

1) Initialization Movement

The initialization action of the master compression plate is made in two occasions.

- (1) If the master compression plate HP sensor is found opened (the master compression plate not found by the sensor) when the machine power is turned ON or when the all-reset key is pressed, the master compression motor rotates in the return direction until the light path of the master compression plate HP sensor becomes blocked. If the light path of the master compression plate HP sensor is blocked from the start, the initializing operation of the master compression plate is not performed.
- (2) If the light path of the master compression plate HP sensor is opened at the start of the master compressing operation, the master compression motor rotates in the return direction until the light path is blocked. If the light path of the sensor is blocked from the start, the initializing operation of the master compression plate is not performed.

2) Master compressing operation

- With only a small amount of removed master in the master disposal box, the master compression plate does not receive so large of a resistance when compressing the disposed masters. From the time the master compression plate escapes from the master compression HP sensor, the machine counts the pulses from the master compression motor FG sensor as the motor rotates in the forward direction to bring the plate down to compress the masters. The master compression plate compresses the disposed master in the master disposal box for the set pulse count and stops. The default pulse count is 163 pulses, adjustable by test mode No. 573. The master compression plate halts for 3 seconds and then the master compression motor rotates in the reverse direction to bring the master compression plate up until the HP sensor detects the plate. This completes the master compressing operation.
- As the number of disposed masters in the master disposal box increases, due to the resistance from the masters in the box, the speed of the master compression plate drops as it tries to compress on the masters. If the movement of the master compression plate drops to a certain speed, the master compression plate stops its downward movement before the FG sensor pulse count set by test mode No. 573 is reached. The minimum speed for the master compression plate to move from one FG count to the next is set by test mode No. 575. The default setting by this test mode for A3/Ledger machine is set to 41 ms for the 1st master removal unit and for the 2nd master removal unit is 38 ms. If the movement of the master compression plate drops under these set speeds, the plate stops the compressing action. After a 3 second halt, the plate returns back to the HP sensor to complete the master compressing operation.
- With the increase in the number of disposed master in the master disposal box, the resistance of the compressed master against the master compression plate increases to a state that the speed of the plate drops below the speed set by test mode No. 575 before the plate swings down for the set pulses by test mode No. 576. The default setting of test mode No. 576 is 162 pulses. If the speed of the master compression plate drops under the default setting by test mode No. 575 before the FG sensor count reaches 162 pulses, the machine determines that the master disposal box is FULL. The master compression plate stops its movement for 3 seconds and returns back to the HP position to complete the master compressing operation. The machine panel display will indicate that the master disposal box is FULL and waits for the operator to empty the disposal box.
- * If Test Mode No. 579 (Compacting Completion Position Default Adjustment Selection) is enabled (default), the pulse speed of the master compressing completion position is calculated by the machine at the start of each master compression, based on the average pulse speed between the 3rd to the 8th pulse count of the master compression motor FG pulse with no resistance applied against the master compression plate. With this averaged out pulse speed in relation to the pulse speed set by test mode No. 575, the machine automatically recalculates and compensates the master disposal box FULL position. This stabilizes the master compressing pressure between the machines even though slight mechanical deviation exists between the master removal unit on one machine to another.

5. Master Disposal Box Remaining Space Indication

The machine makes the following calculation during the master compressing operation to determine the panel display percentage for the remaining space in the master disposal box.

- A: Pulse count set by Test Mode No. 573 (Master compression end position).
- B: Pulse speed set by Test Mode No. 575 (Minimum pulse speed) or a recalculated pulse speed when test mode No. 579, described on the previous page, is enabled.
- C: Average pulse speed between the 3rd and 8th pulse of the master compression motor FG sensor (The speed of the master compression motor with no resistance applied against the mater compression plate.)

The value of X is calculated:

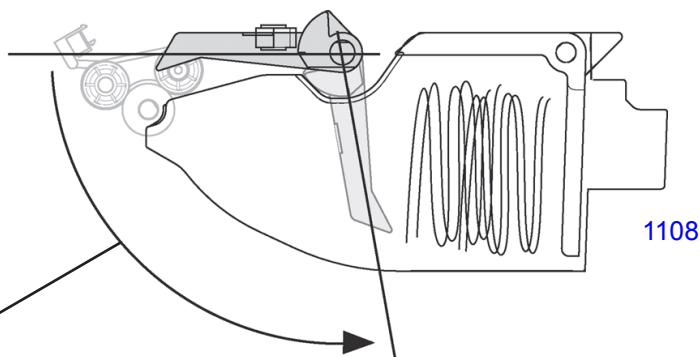
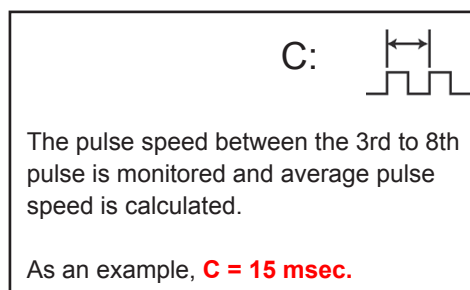
$$X = (A - C) / (B - C) \times 100$$

The disposed master volume is as indicated on the table below in accordance with the value X.

Value X		Panel indication for the remaining space in the master disposal box
1st master removal unit on A3/Ledger machine	2nd master removal unit on A3/Ledger machine	
8 or less	24 or less	100% to 50%
9 to 24	25 to 52	50% to 30%
25 to 65	53 to 70	30% to 10%
66 or more	71 or more	10 or less
Conditions for master disposal box FULL are met.		FULL

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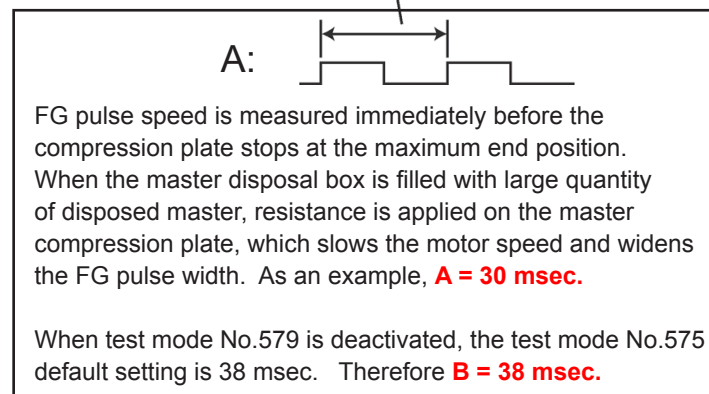
<< The diagram shows an example for the second master removal unit of A3/Ledger machine with the Test Mode Nos. 573 and 575 at the default settings. >>



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The master compression plate rotates to the maximum end position and stops. The maximum end position is 100° (163 pulses) from the home position.

Note: Since the pulse count at FULL is 162, the compression plate rotates to the maximum end position, except when the master disposal box is FULL.



A - C = 15 msec. is the amount of motor speed down when disposed masters add the resistance.
B - C = 23 msec. is the amount of motor speed down when the disposal box is FULL.

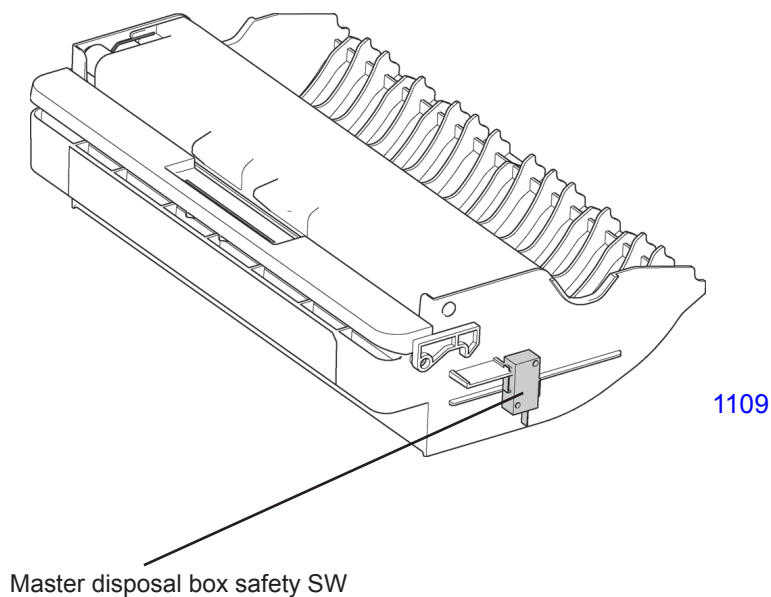
The percentage display on the operation panel for the remaining space in the master disposal box is **15 msec. / 23 msec. x 100 = 65**. The percentage displayed on the panel is **30% to 10%**.

6. Master Disposal Box Safety Switch

The master disposal box safety switch checks whether the master disposal box is correctly set in the machine.

If the master disposal box safety switch on either of the master removal unit is OFF, the main motor, first clamp motor, second clamp motor, first master disposal motor, second master disposal motor, first master compression motor, second master compression motor, first horizontal pulse motor, second horizontal pulse motor, cutter motor, and master making unit transport pulse motor cannot be switched ON.

The master disposal box FULL message is reset by switching the master disposal box safety switch OFF for 5 seconds. In other words, the FULL message is reset by pulling the master removal box out for at least 5 seconds.

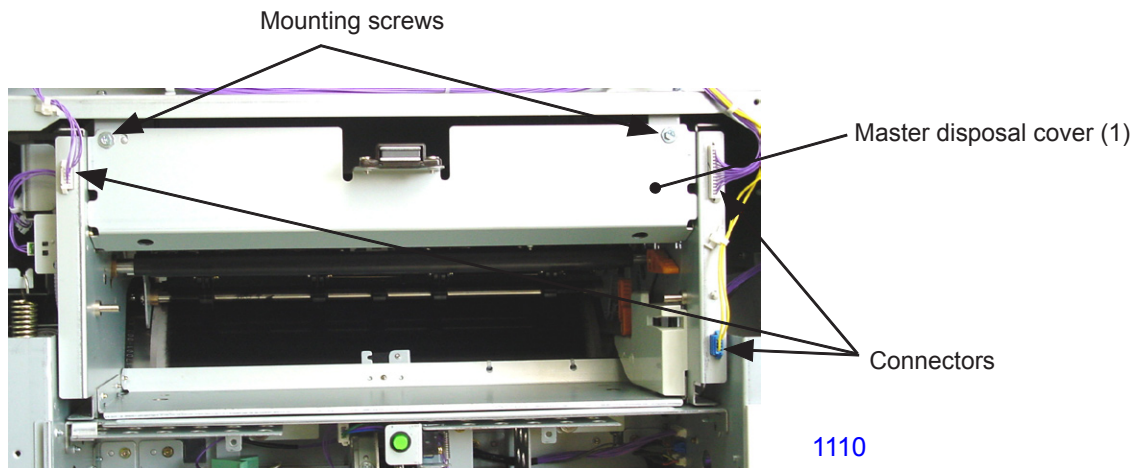


Disassembly

1. Removing the Master Removal Unit

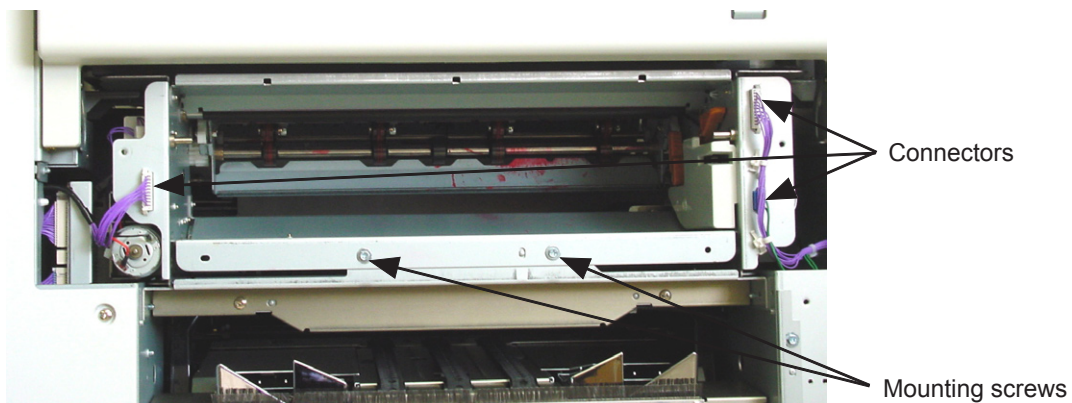
Removing the first master removal unit

- (1) Switch OFF the machine power and pull out the master disposal box.
- (2) Remove the master disposal cover (1) and the paper feed cover.
- (3) Unplug the three connectors, remove the one reusable band, remove two mounting screws (M4x8), and pull out the master removal unit toward the paper feed side.



Removing the second master removal unit

- (1) Switch OFF the machine power and pull out the master disposal box.
- (2) Remove the master disposal cover (2).
- (3) Disengage the lock located on the master making unit drawer cover using a thin plate, such as a steel measure. Then open the master making unit drawer cover.
- (4) Disengage the lock and slide the master making unit toward the first print drum side.
- (5) Remove four mounting screws (M4x8). [Two screws are on the paper ejection side. The other two screws are on the top.]
- (6) Unplug the three connectors, remove the two reusable bands, and pull out the master removal unit toward the paper ejection side.



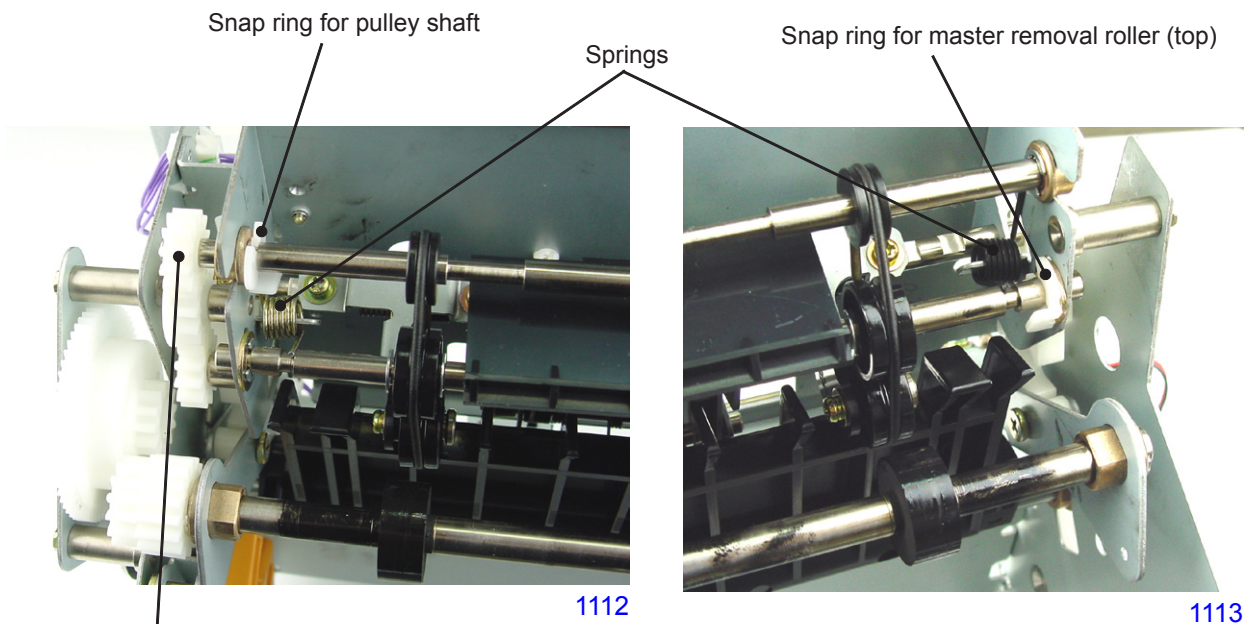
2. Removing the First Master Removal Unit

Removing the round belt

- (1) Press the release lever to drop down the master removal roller (bottom) assembly.
- (2) Detach the snap ring on the front side of the unit and remove the pulley shaft.
- (3) Detach the snap ring from the rear side of the unit, detach the springs from both sides, and remove the master removal roller (top).

<< Precautions in installation >>

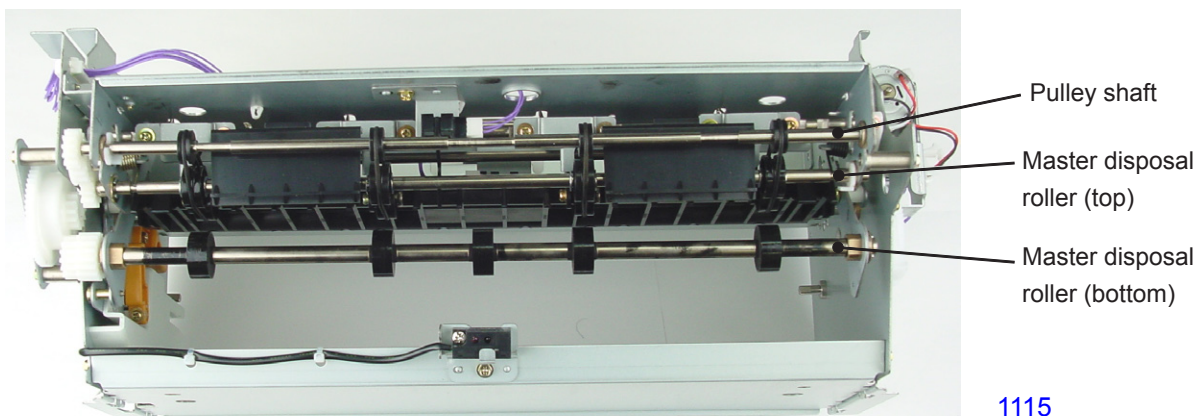
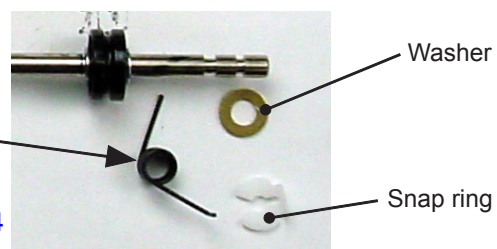
The black spring is installed on the rear side.



Detach the snap ring, move the bearing metal out of the way, disengage the gears, and slide the shaft toward the front side.

Detach the snap ring and springs and slide the shaft toward the rear.

Spring
(Black spring is from the rear)

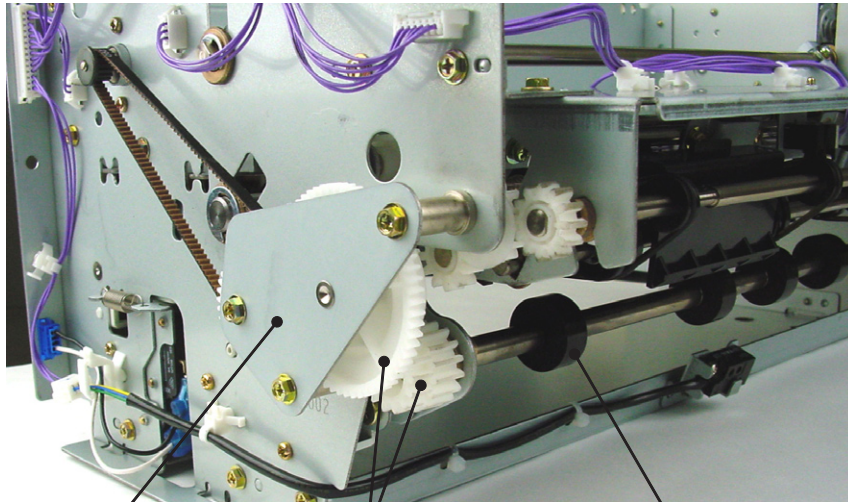


<< Front side >>

<< Rear side >>

Removing the master removal roller (bottom)

- (1) Press the release lever to drop down the master removal roller (bottom) assembly.
- (2) Remove the master transport gear bracket. (M3x6 screws; 3 pcs)
- (3) Remove the two spur gears.
- (4) Detach the E-rings from the master removal roller (bottom) from the front and rear sides, remove the bearing metal, and dismount the master removal roller (bottom).



Master transport gear bracket

Spur gears

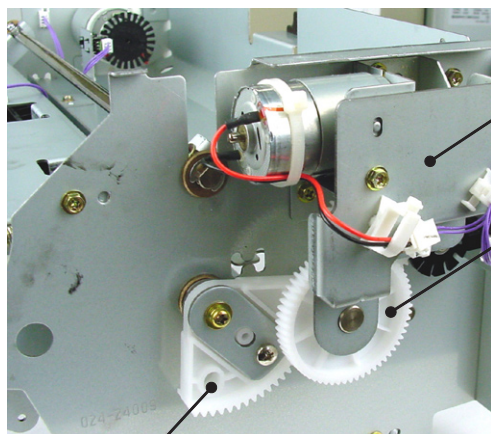
Master removal roller (bottom)

Removing the compression plate

- (1) Keep the master removal roller (bottom) assembly at the raised position.
- (2) Remove the compression gear cover (1). (M3x6 screws; 2 pcs)
- (3) Remove the spur gear and lower the compression plate.
- (4) Remove the compression plate block. (double-washer type M4x8 screw; 1 pc)
- (5) Detach the E-rings from the compression plate shaft from both ends, detach the bearing metal, and dismount the compression plate.

<< Precaution in installation >>

When installing the compression gear cover (1), keep the compression plate in the raised position.



Compression gear cover (1)

Spur gear

Compression plate block

1117

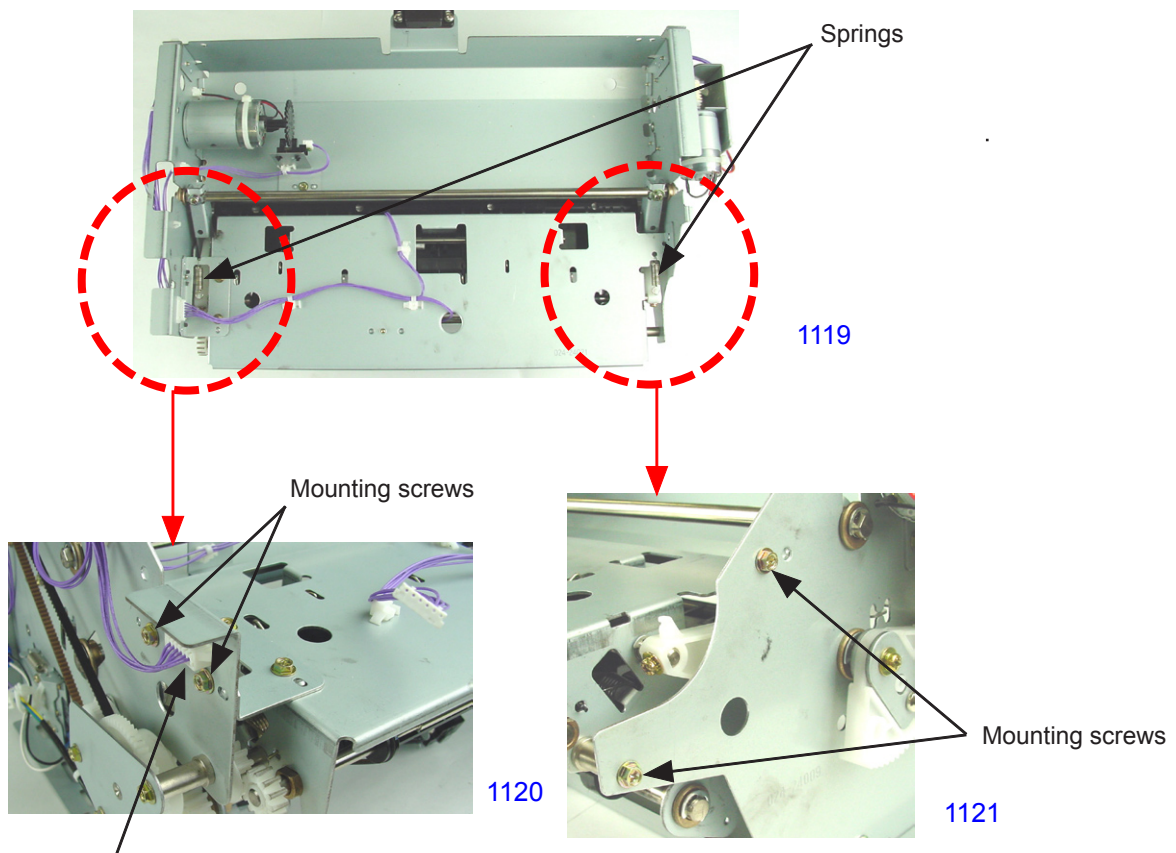


<< Master compression plate >>

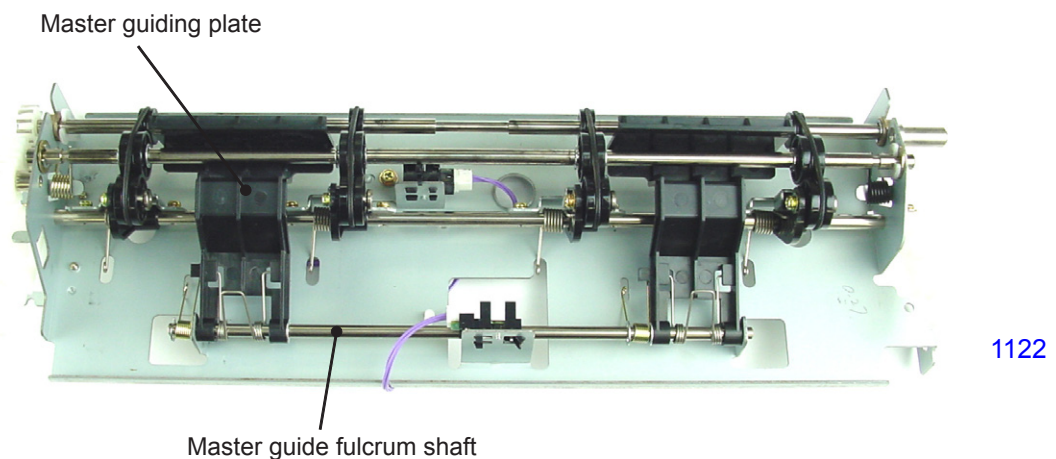
1118

Removing the master removal roller unit and the master guiding plates

- (1) Press the release lever to drop down the master removal roller (bottom) assembly.
- (2) Unplug the connector. (Keep the connector section away from the side plate.)
- (3) Remove the springs from the front and rear sides.
- (4) Remove 2 pcs each of mounting screws at the front and rear sides from the outside of the side plates. (M3x6 screws)
- (5) Gently push aside the side plate and remove the master removal roller unit.
- (6) Remove the E-ring from the master guide fulcrum shaft.
- (7) Slide the master guide fulcrum shaft and remove the master guiding plates.



Also remove this section of the connector from the side plate.

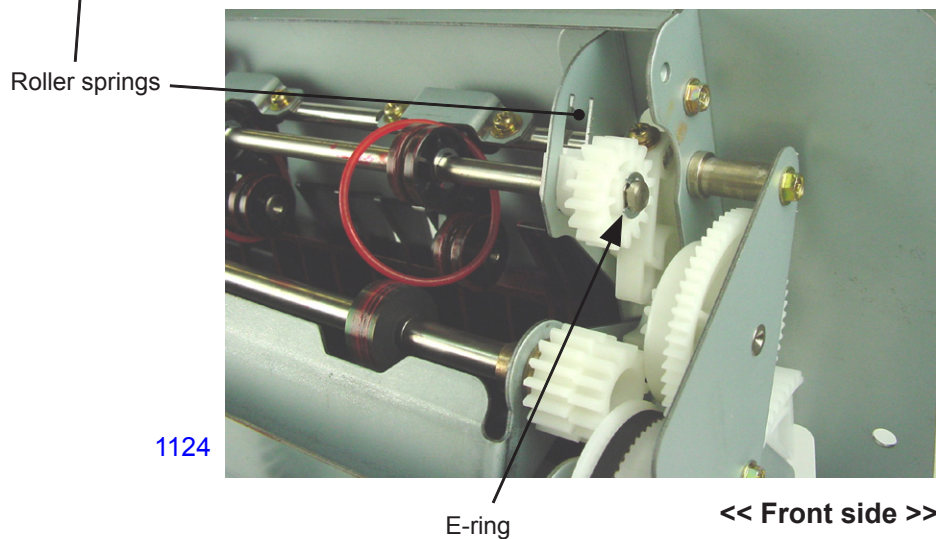
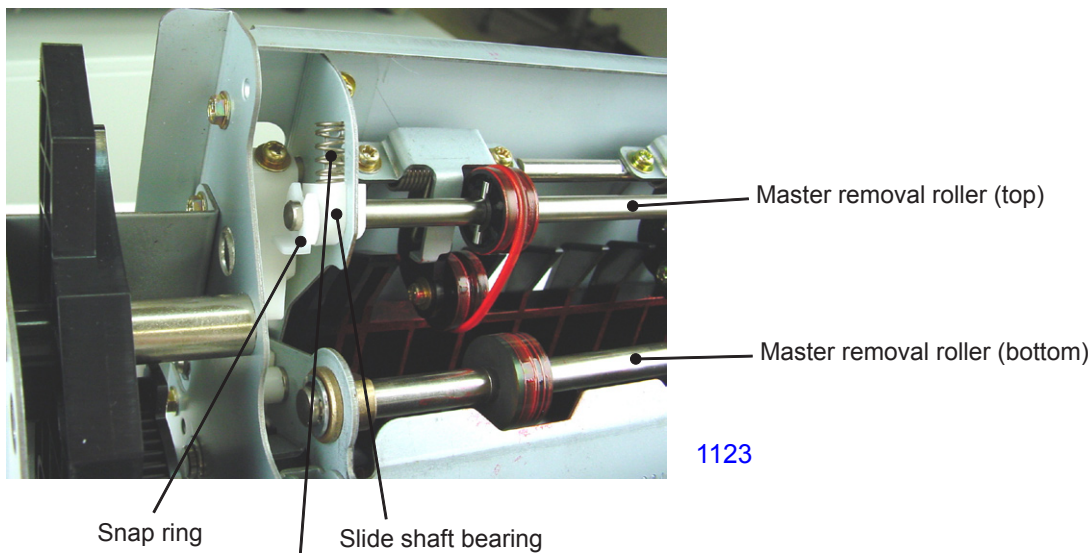


3. Removing the Second Master Removal Unit

Removing the round belt

- (1) Press the release lever to drop down the master removal roller (bottom) assembly.
- (2) Detach the roller springs from both the front and rear sides of the master removal roller (top).
- (3) Detach the snap ring from the rear side and remove the boss to which the spring was attached.
- (4) Remove the E-ring from the front side and dismount the slide shaft bearing.
- (5) Remove the master removal roller (top).

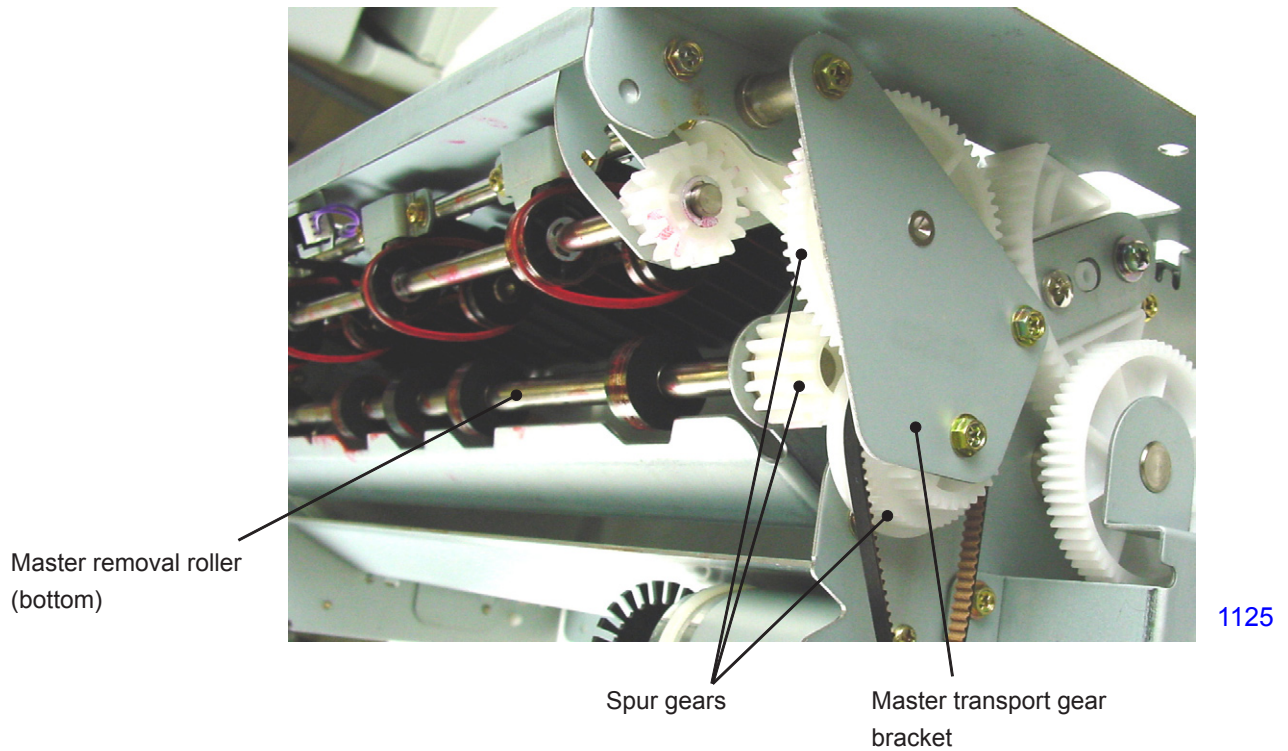
<< Rear side >>



<< Front side >>

Removing the master removal roller (bottom)

- (1) Press the release lever to drop down the master removal roller (bottom) assembly.
- (2) Remove the master transport gear bracket. (M3x6 screws; 3 pcs)
- (3) Remove the three spur gears.
- (4) Detach the E-rings from both sides of the master removal roller (bottom), remove the bearing metal, and dismount the master removal roller (bottom).

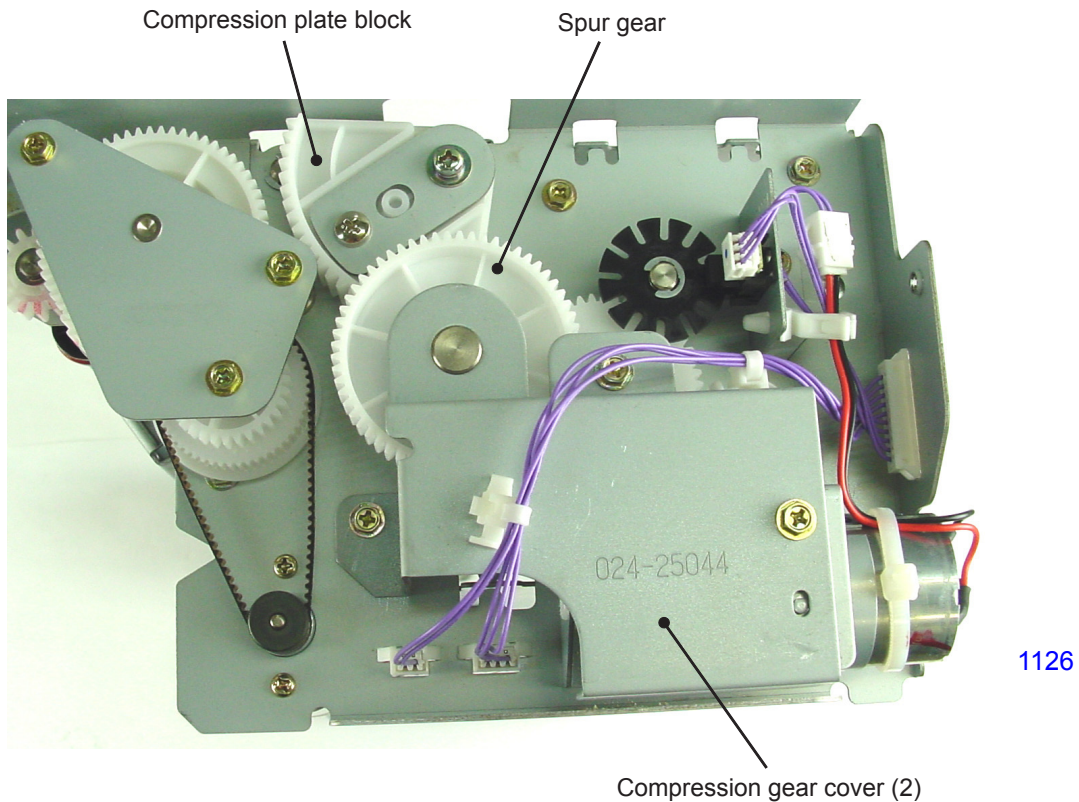


Removing the compression plate

- (1) Keep the master removal roller (bottom) assembly at the raised position.
- (2) Remove the compression gear cover (2). (M3x6 screws; 3 pcs)
- (3) Remove the compression plate block and lower the compression plate.
- (4) Remove the sector gear. (double-washer type M4x8 screw; 1 pc)
- (5) Detach the E-rings from both ends of the compression plate shaft, detach the bearing metal, and dismount the compression plate.

<< Precaution in installation >>

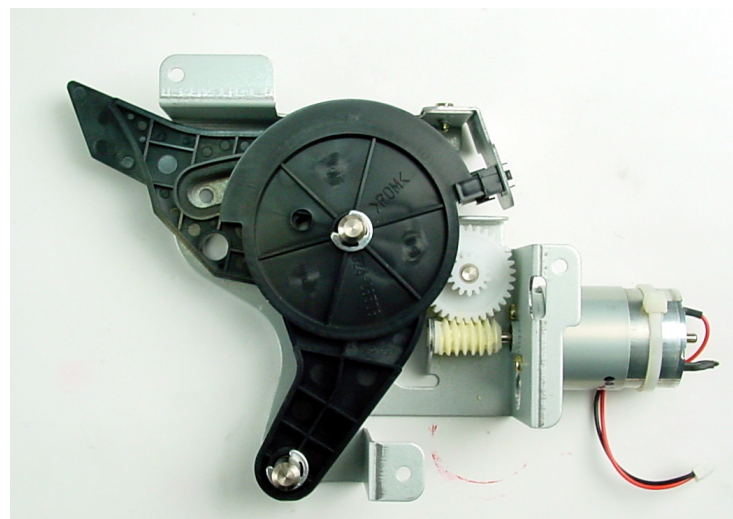
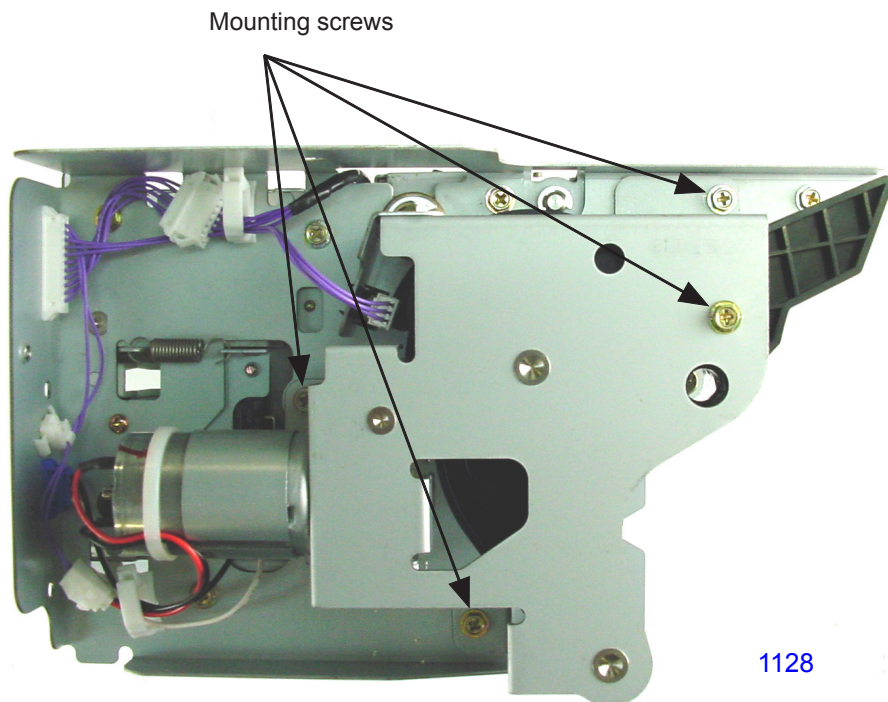
When installing the compression gear cover (2), keep the compression plate in the raised position.



<< Master compression plate >>

Removing the second clamp unit

- (1) Unplug the connectors at two locations.
- (2) Remove four mounting screws and dismount the unit. (M3x6 screws)

**<< Second clamp unit >>**

MEMO

CHAPTER 12: FB ORIGINAL SCANNING SECTION

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Mechanism

1. Original Scanning Mechanism

The FB read pulse motor drives the front and rear wire drum by timing belts with the speed reduced by two speed reduction pulleys.

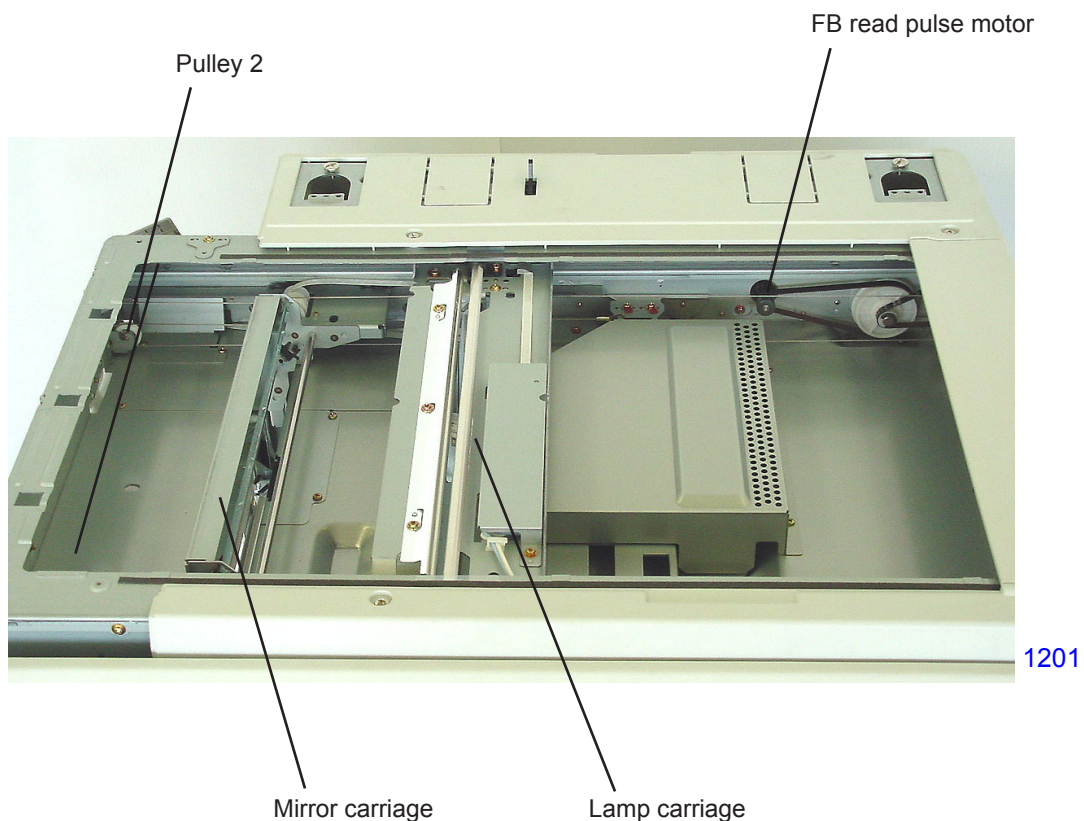
The wire drive system for the front and rear are symmetrically made.

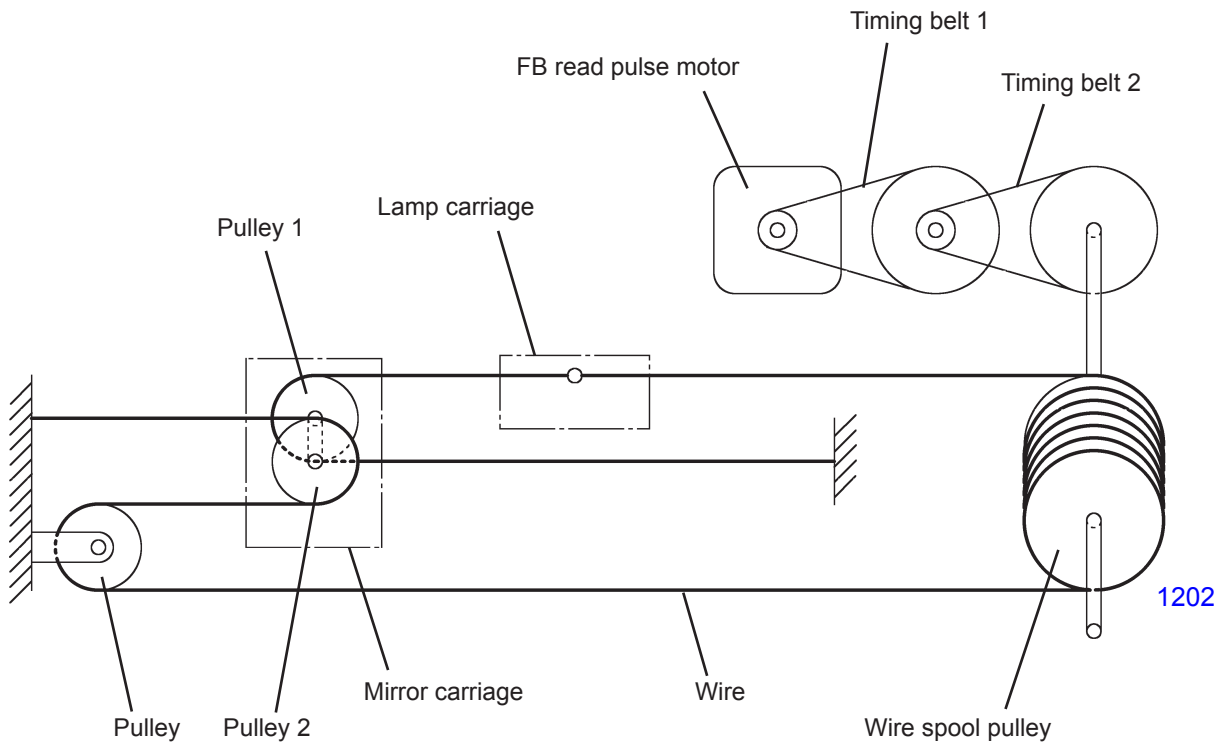
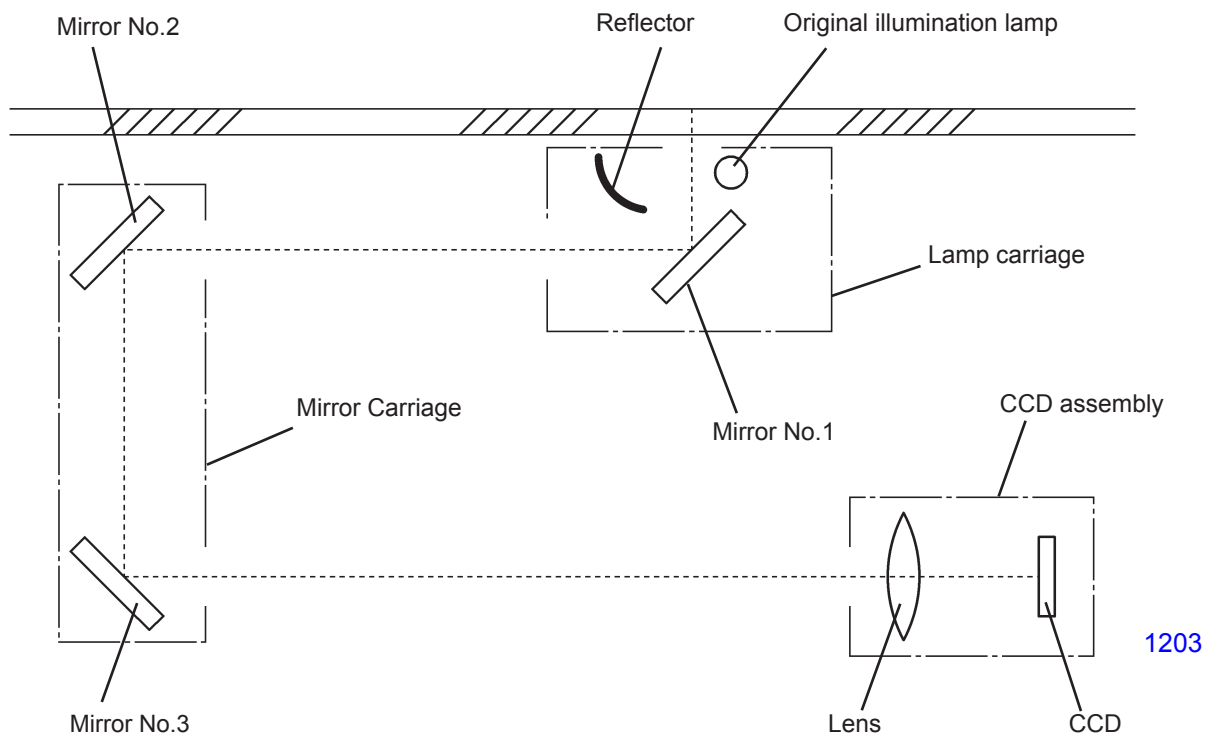
One end of the wire is secured to the front side of the scanner unit frame and from there it goes around pulley No.2 mounted on the mirror carriage. It then goes around the pulley fixed on the front side of the scanner unit frame and then wound on wire spool pulley located at the back of the scanner unit. From the wire spool pulley, the wire is attached onto the lamp carriage. It then continues to go around the pulley No.1 on the mirror carriage and finally the other end is fixed on the frame of the scanner unit.

The lamp carriage is mounted with one original illumination lamp, a reflector, a lamp inverter, and mirror No.1. The mirror carriage is provided with mirrors No. 2 and No.3.

The mechanism uses a “full/half-rate mirror scanning” system, in which the mirror carriage moves $1/2 L$ mm as the lamp carriage moves L mm in the same direction. This means that when the FB read pulse motor is activated, the original can be scanned while maintaining a constant distance between the original and the lens on the CCD assembly mounted on the scanner unit.

The original on the scanner table illuminated by the lamp is reflected via mirrors No.1, 2, and 3, and the scanned image is then focused onto the CCD by the lens on the CCD assembly.



Drive system diagram**Optical system diagram**

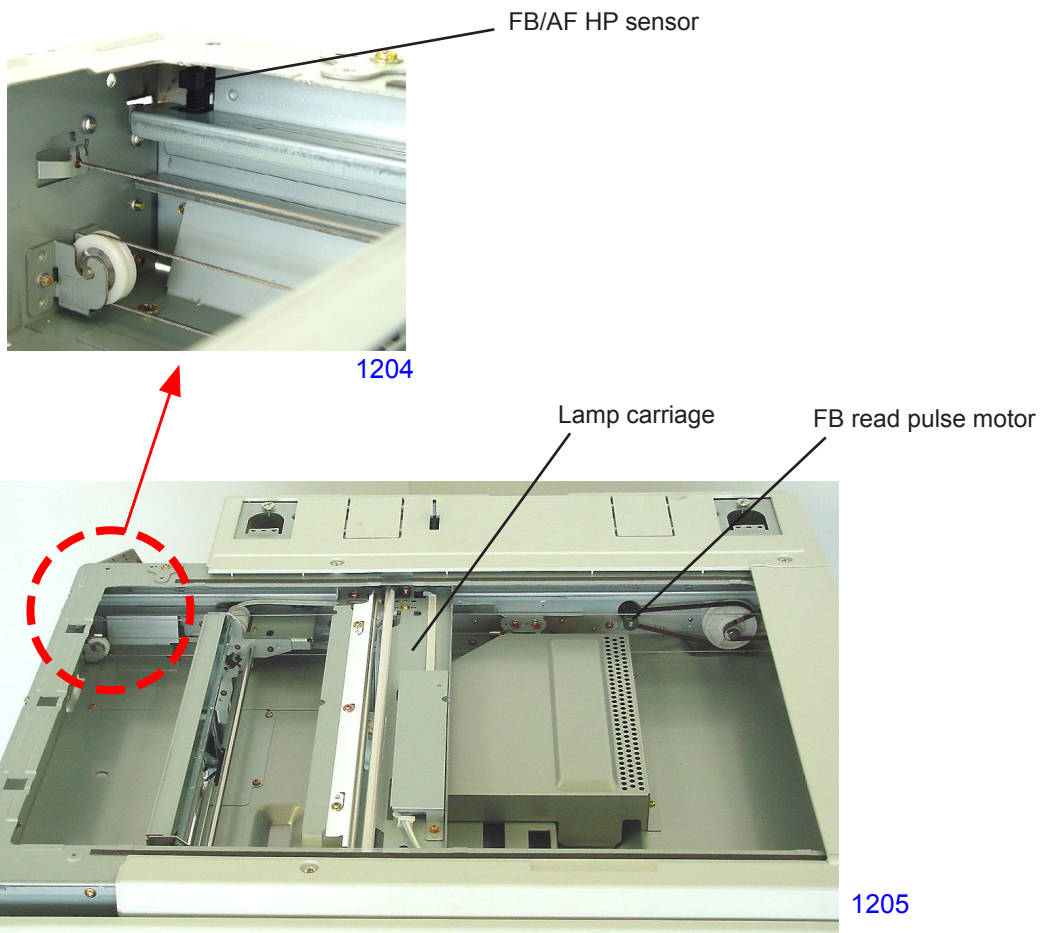
2. Flatbed Initialization Movement

Initialization is performed in the following situations to bring the flatbed unit to the home position.

- When the machine power is switched on.
- When recovering from the sleeping mode (wake-up).
- When All-Reset button is pressed.

Initialization operation

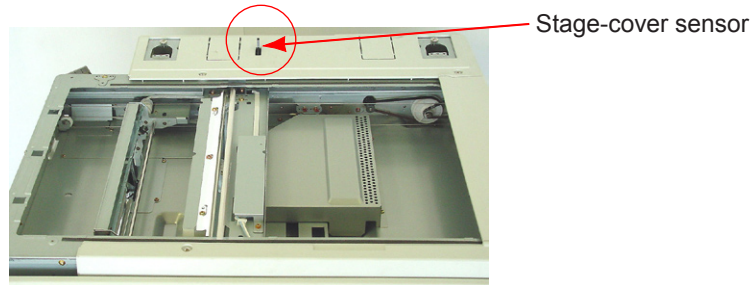
- (1) When any of the above three action is taken, if the FB/AF HP sensor is detecting the lamp carriage, the FB read pulse motor rotates in the scanning direction in 25mm to move the lamp carriage out of the sensor detection. Then the FB read pulse motor rotates in the return direction until the sensor detects the lamp carriage again, and then keeps on moving until the lamp carriage moves 7mm further from the detected position and stops. This is the home position of the lamp carriage, and at the home position the sensor is still detecting the carriage.
- (2) If the lamp carriage was not detected when any of the above three action is taken, the FB read pulse motor rotates in the reverse direction to move the carriage back 10mm and stops. If the HP sensor detects the carriage during this movement, the initialization movement explained in the above paragraph (1) takes place. If the carriage was not detected during the 10mm reverse movement, the pulse motor rotates in the forward direction to move the carriage 10mm in the scanning direction. Then the pulse motor rotates in the reverse direction to bring the carriage back until the HP sensor detects the carriage and stops after the carriage moves 7mm from the detected position (home position).



3. Stage-Glass Original Detection Mechanism

The FB original detection sensor checks whether an original has been placed on the stage glass. As soon as the stage cover is closed halfway, blocking the light path to the stage-cover sensor, the FB original detection sensor checks whether there is an original on the stage glass. If the flatbed original detection sensor is receiving light (original present), the indication on the operation panel changes to "Master Making" and the shading-compensation and auto-base-control adjustment are performed. The lamp carriage is then moved to the scanning standby position with the scanner lamp turned on. If the Start key is pressed within 60 seconds, the scanning operation starts.

If the Start key is not pressed within 60 seconds, the scanner lamp turns off and the lamp carriage returns back to the home position.

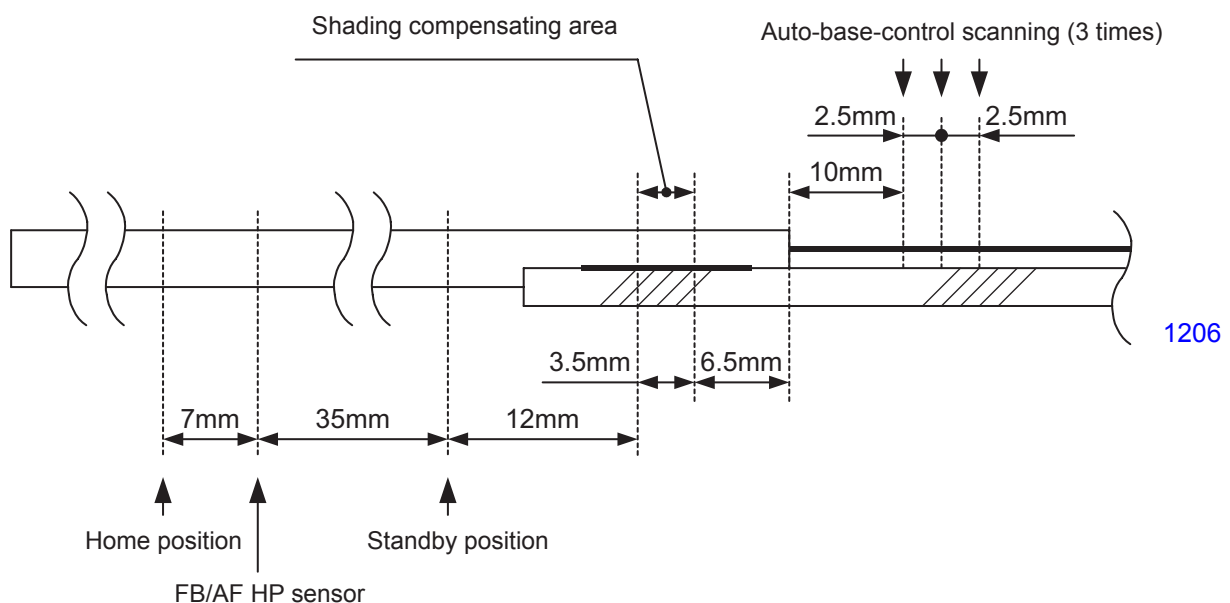


4. FB Auto-Base-Control

When an original is set and the stage cover is closed, or when the original scanning density is set to "AUTO" and if the operation starts from the lamp carriage at home position, the auto-base-control, which is explained below, is conducted after the shading-compensation is performed.

With an original set on the scanner table and when the stage-cover sensor detects the stage cover closed, or when the Start key is pressed, the scanner lamp illuminates and the FB read pulse motor rotates in the scanning direction. At a distance of 47mm after the lamp carriage escapes from the FB/AF HP sensor, the lamp carriage stops for a very short period and moves another 3.5mm in which the shading-compensation is made. After the shading-compensation is performed, the lamp moves 16.5mm in the scanning direction (10mm from the leading edge of the original) and the CCD reads the color density of the original background. The original background is read two more times after moving the lamp 2.5mm in distance the each time. Therefore, the auto-base-control scanning is made 3 times in total.

The FB read pulse motor then rotates in the reverse direction to bring the lamp carriage back to the standby position and starts the original scanning.



5. FB Scanning Mechanism

When the Start key is pressed, the FB read pulse motor activates to move the lamp carriage in the scanning direction. After the top 4 mm of the original is skipped, the read signal turns ON and the original scanning operation starts.

Once the scanning is made for a specific given distance, the scanner lamp turns off to end the scanning operation.

The lamp carriage returns back to the home position after the scanning operation is finished.

6. Original Size-Detection Mechanism

If the flatbed original det. sensor detects its reflected light (original present), the size of the original is detected based on the detection statuses of flatbed original size sensors 1 to 7 (reflection-type sensors). The size of the original is determined as shown in the table below.

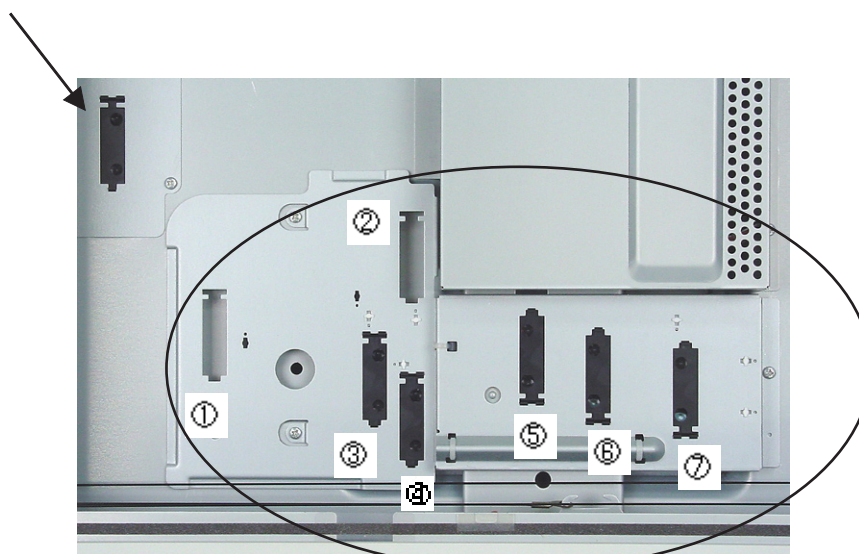
Detected original size	Flatbed original size sensor No.						
	1	2	3	4	5	6	7
A5	1	1	0	0	0	0	0
B5	1	1	0	0	1	0	0
A5-R	1	0	0	0	0	0	0
B5-R	1	0	1	0	0	0	0
A4-R	1	1	1	1	0	0	0
Bookcap	1	1	0	0	1	1	1
B4	1	1	1	0	1	1	1
A4-R	1	1	0	0	1	1	0
A3	1	1	1	1	1	1	1

* [1] indicates sensor light reflected back (original present), and

[0] indicates sensor light not reflected back (no original).

* The original size will not be identified for combinations other than those listed.

Flatbed original det. sensor



Flatbed original size sensor

Disassembly

1. Removing the Scanner Unit

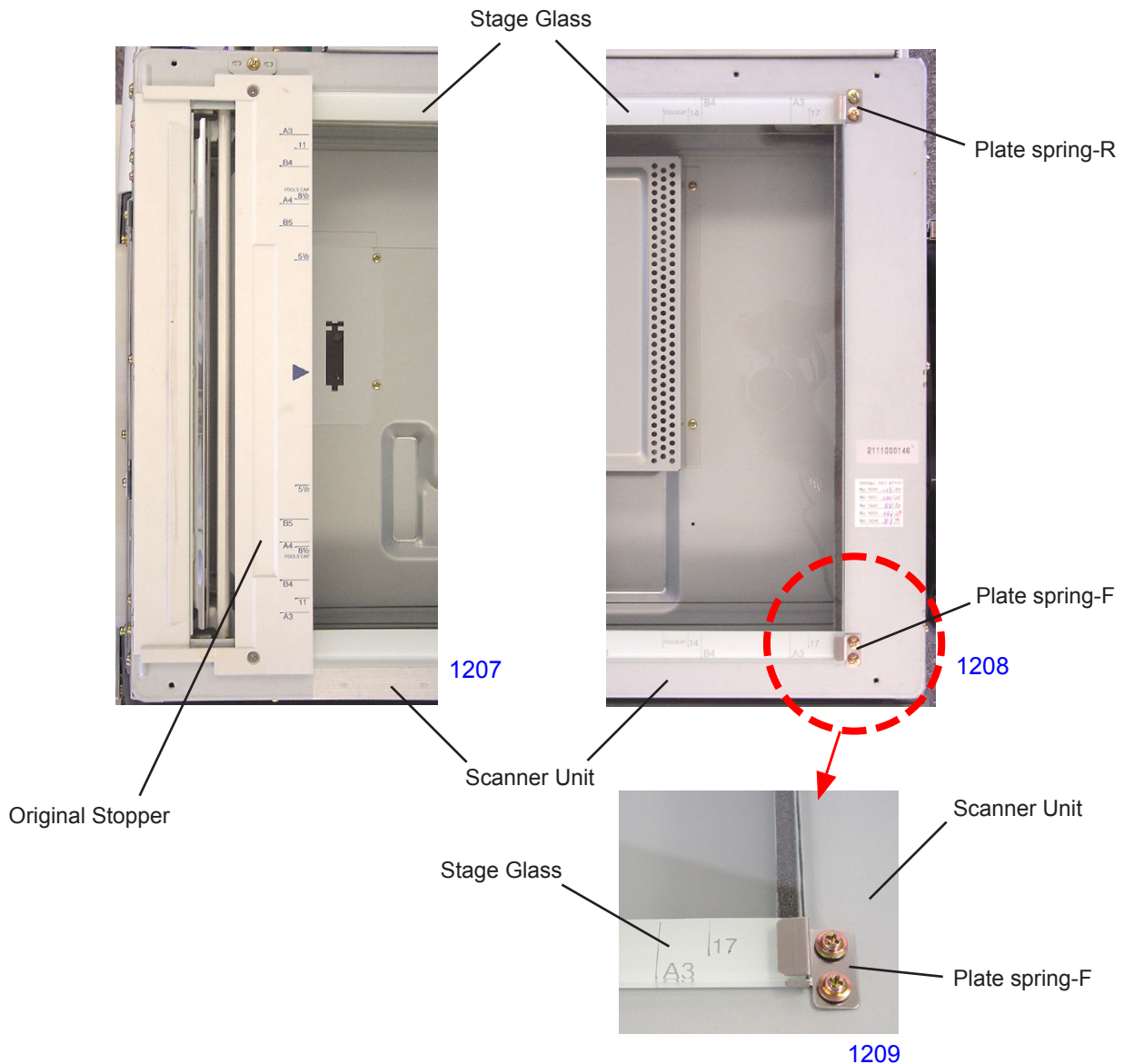
- (1) Switch off the machine power and remove the following covers.
 - Stage cover
 - Scanner cover;paper feed
 - Scanner cover;rear
 - Scanner cover;paper ejection
 - Operation panel
 - Side cover;paper ejection
- (2) Detach electrical noise blocking plate from the SH PCB bracket (M4x6 screws; 5 pcs).
- (3) Detach the cover-open-sensor (M4x8 screw; 1 pc).
- (4) Disconnect connector from Relay PCB.
- (5) Disconnect the FB-read pulse motor connector.
- (6) Disconnect the connector of the scanner (flat cable) from the SH PCB.
- (7) Remove two hinge mounting brackets (M4x8 screws; 4 pcs each).
- (8) Remove five mounting screws (M4x8) of the scanner unit and lift the scanner unit off the machine. **(This is a heavy precision component. Handle with care.)**

< Precautions in Assembly >

- (1) When replacing with a new scanner unit, make sure to remove the large screw, which fixes the mirror carriage on the scanner unit for the transportation purpose.
- (2) Prior to reassembly, memo down the information label located on the top right of the scanner unit, listing the necessary Test Mode adjustments for the scanner unit.

2. Removing the Stage Glass

- (1) Switch off the machine power and remove the following covers.
 - Scanner cover;paper feed
 - Scanner cover;paper ejection
- (2) Remove two shoulder screws and detach the original stopper.
- (3) Detach the plate springs F & R by removing screws (M3x6: 2pcs each).
- (4) Lift and remove the stage glass.



< Stage-glass installation procedure >

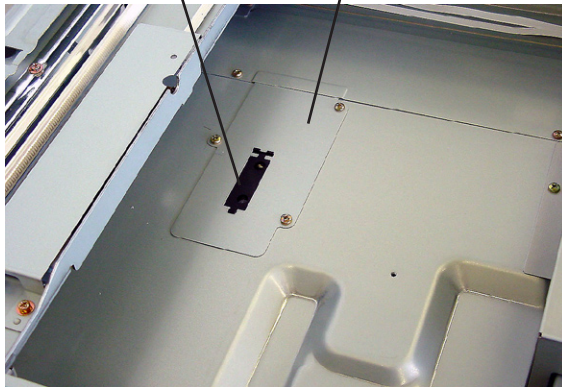
- (1) Put the stage glass on the scanner unit.
- (2) Install the original stopper.
- (3) Push and slide the stage glass against the original stopper.
- (4) Install the plate springs F & R, pushing tightly against the stage glass, and secure with screws.
- (5) Reinstall the covers.

3. Removing the FB Original Detection Sensor

- (1) Switch off the machine power and remove the stage glass.
- (2) Remove screws (M3x6: 3pcs), lift the sensor cover with the FB original detection sensor attached. Disconnect the sensor connector and detach the FB original detection sensor together with the sensor cover.
- (3) Disengage the claws (3 locations) on the FB original detection sensor from the sensor cover to detach the sensor.

FB original detection sensor

Sensor cover

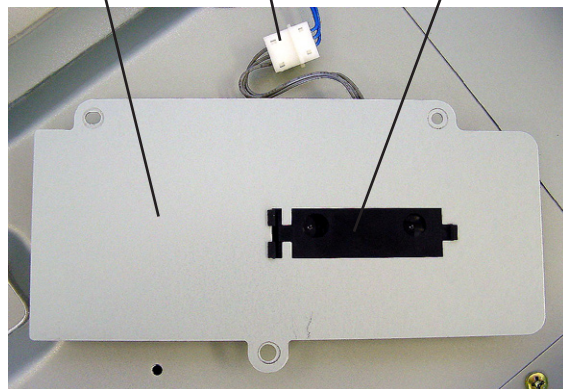


1210

Sensor cover

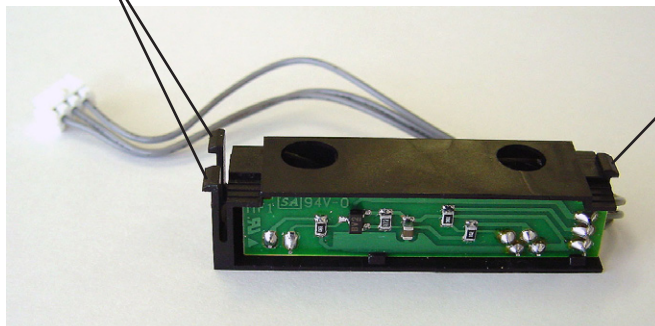
Connector

FB original detection sensor



1211

Sensor claws



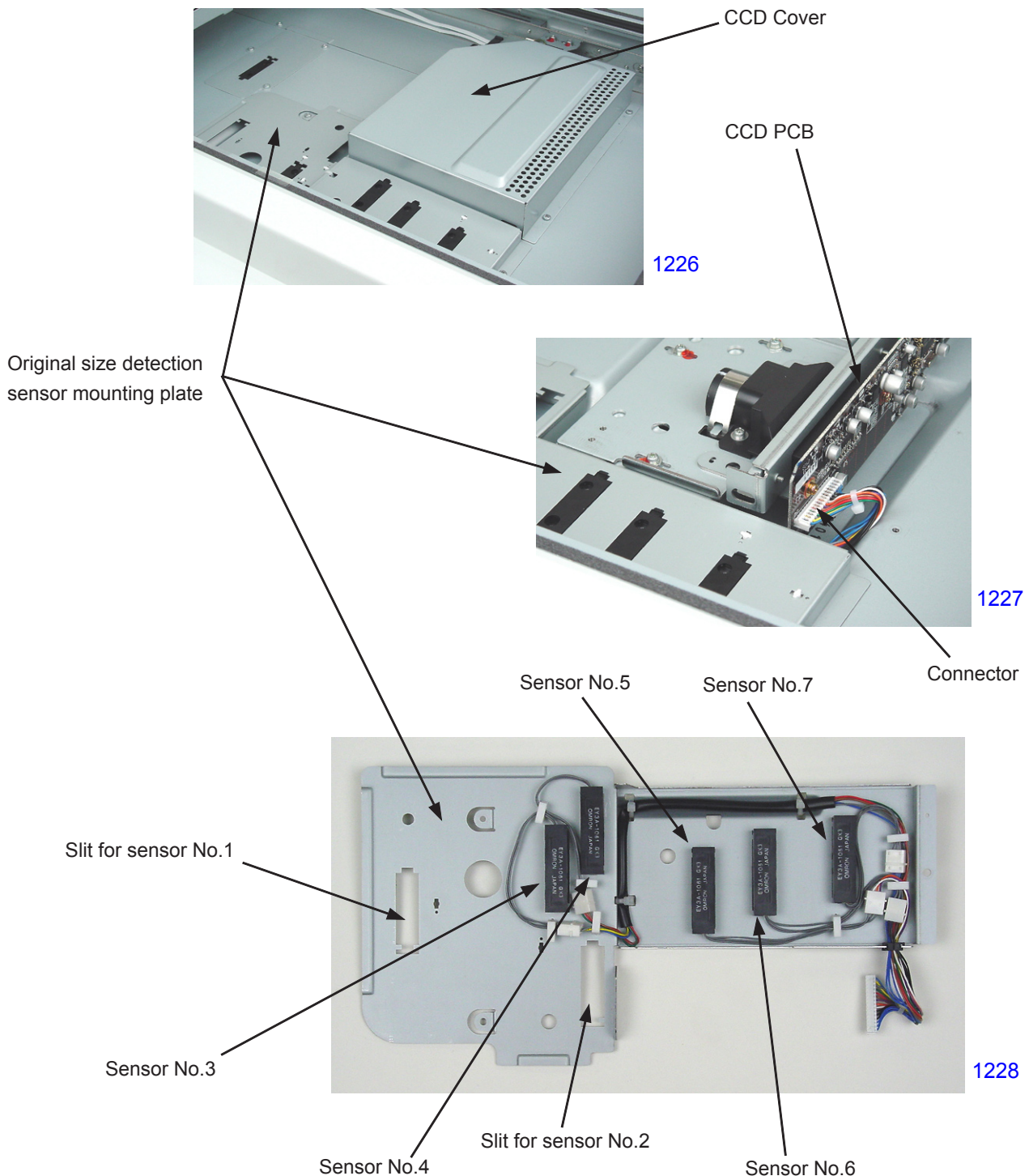
Sensor claw

1212

< FB Original Detection Sensor >

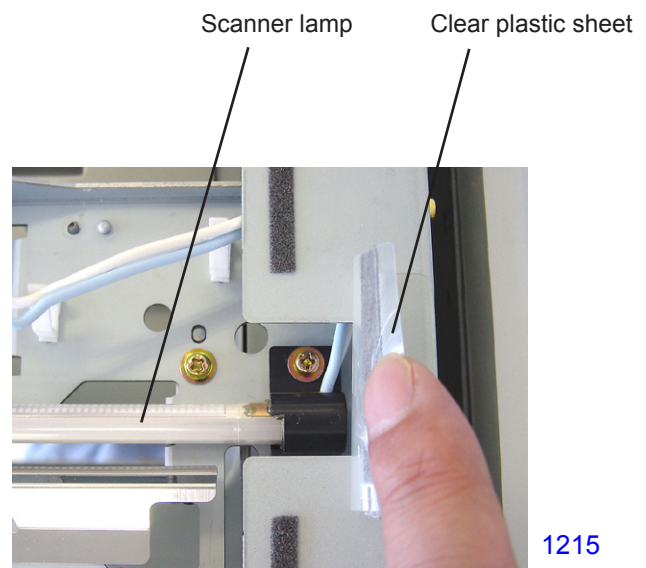
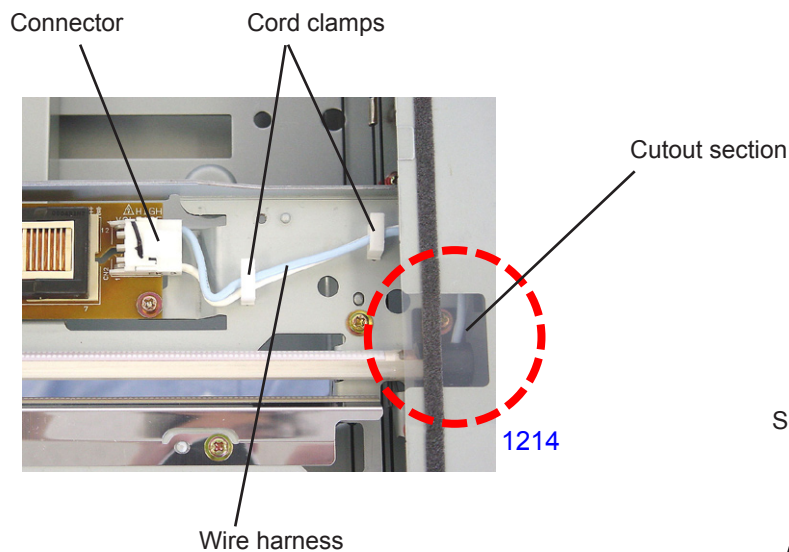
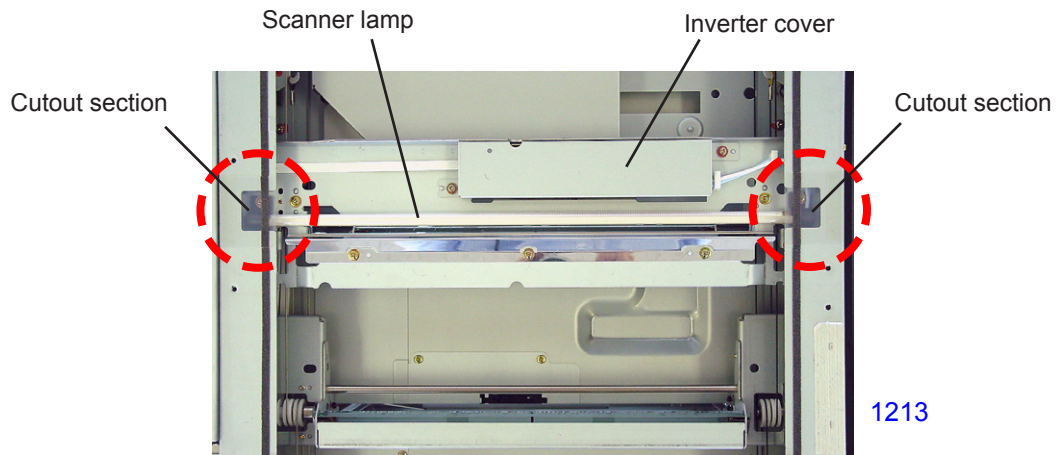
4. Removing the Original Size Detection Sensors

- (1) Turn OFF the machine power and remove the stage glass..
- (2) Remove the CCD cover by removing three screws (M3x6).
- (3) Disconnect the original size detection sensor connector from the CCD PCB .
- (4) Remove the original size detection sensor mounting plate with the sensors attached, by removing 3 screws (M3x6).
- (5) Detach the required sensor from the sensor mounting plate by unhooking the three claws from the bracket and disconnecting the connector from the sensor.



5. Removing the Scanner Lamp

- (1) Run Test Mode No.287 (scanner lamp replace positioning) and switch off the machine power.
- (2) Remove the stage glass.
- (3) Remove screws(M3x6: 2pcs) and detach the inverter cover.
- (4) Unhook the wire harness to the scanner lamp from the cord clamps (2 locations), and disconnect the connector from the inverter.
- (5) By lifting the clear plastic sheet on the cutout section of the scanner unit, remove screws (M3x6: 1pc each) from the both sides, and detach the scanner lamp.



6. Removing the CCD Unit

- (1) Switch off the machine power and remove the stage glass.
- (2) Remove screws (M3x6: 3pcs) and detach the CCD cover.
- (3) Remove original size detection sensor plate.
- (4) Disconnect the CCD cable from the CCD PCB while supporting the PCB firmly by hand.
- (5) Remove screws (M3x6: 3pcs) and detach the CCD unit.

< CCD Unit Installation Procedure >

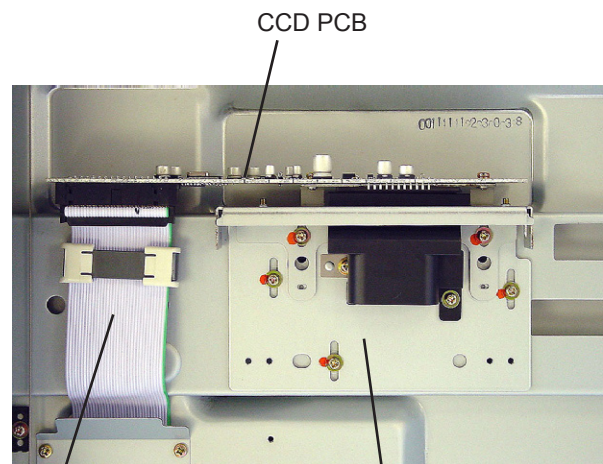
- (1) The replacement CCD unit is pre-adjusted at the factory with the positioning brackets attached on the left and right of the unit for a correct positioning. Therefore, fit the holes on the positioning brackets into the positioning pins on the scanner unit, and secure the CCD unit in place using three screws.
- (2) After the CCD unit is firmly screwed onto the scanner unit, unscrew and detach the positioning brackets off the left and right of the CCD unit.
- (3) Connect the CCD cable onto the CCD PCB while supporting the PCB firmly by hand.

< Precautions in Assembly >

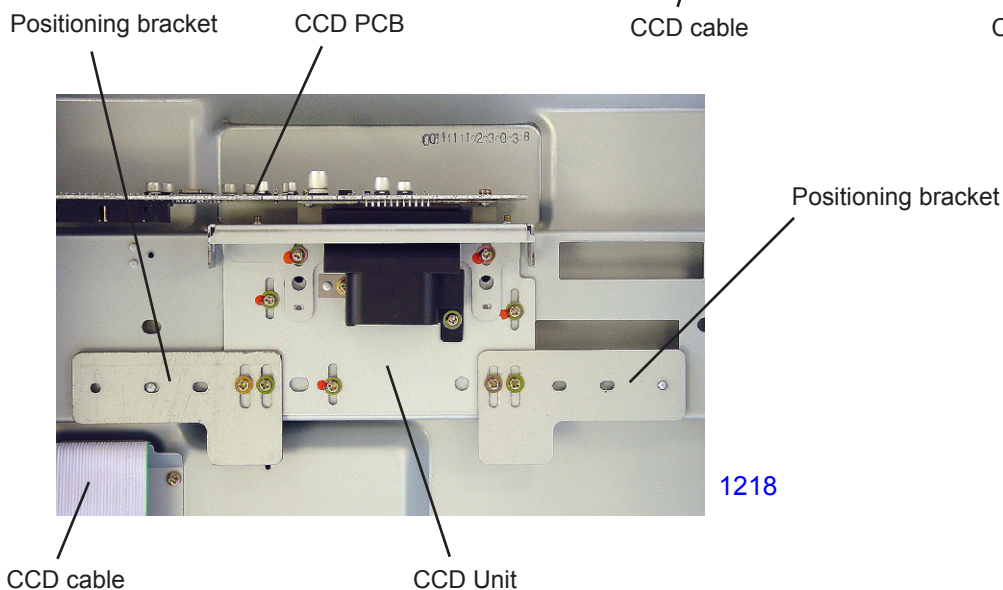
To prevent damages to the CCD PCB, firmly support the PCB by hand while connecting or disconnecting the CCD cable to the PCB.



1216



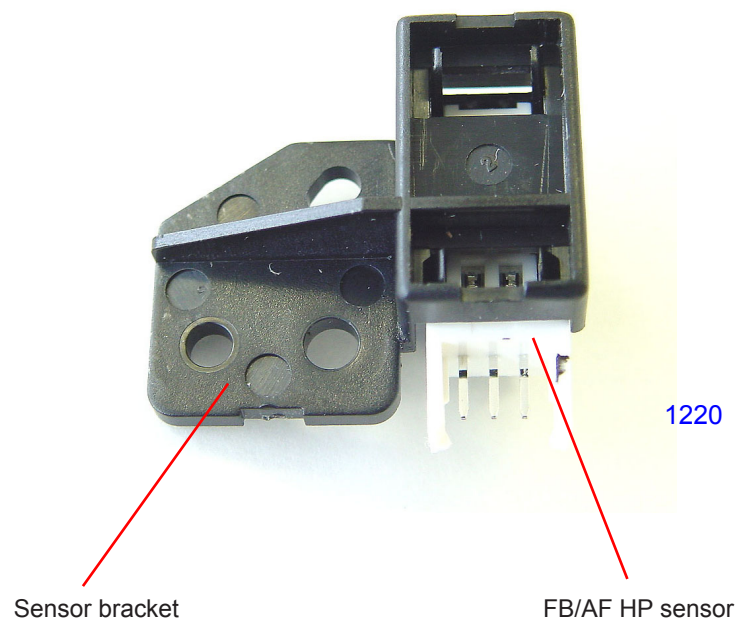
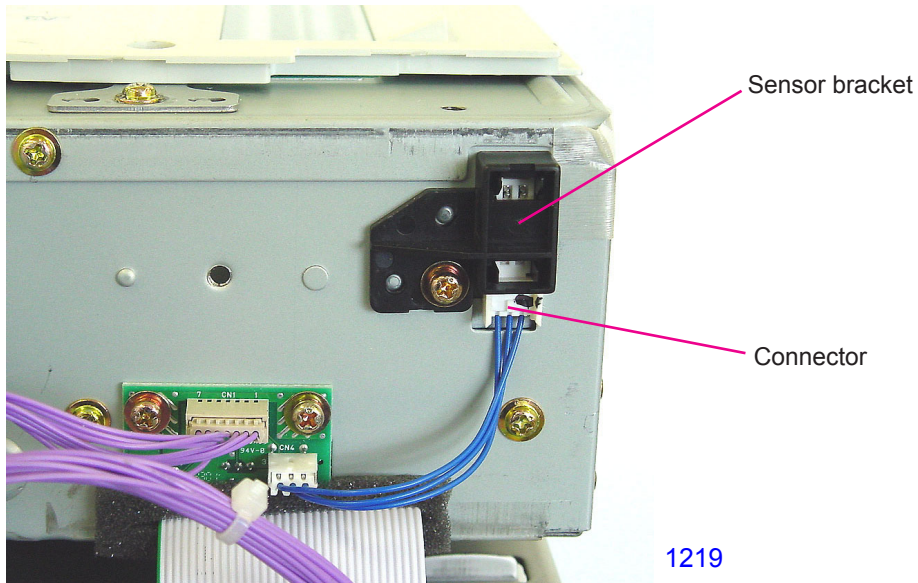
1217



1218

7. Removing the FB/AF HP Sensor

- (1) Switch off the machine power and remove the scanner cover;paper feed.
- (2) Detach the FB/AF HP sensor, together with the sensor bracket, from the scanner unit by removing screw (M3x6: 1pc), and disconnect the connector to the sensor.
- (3) Disengage the claws on the FB/AF HP sensor from the sensor bracket to remove the sensor.

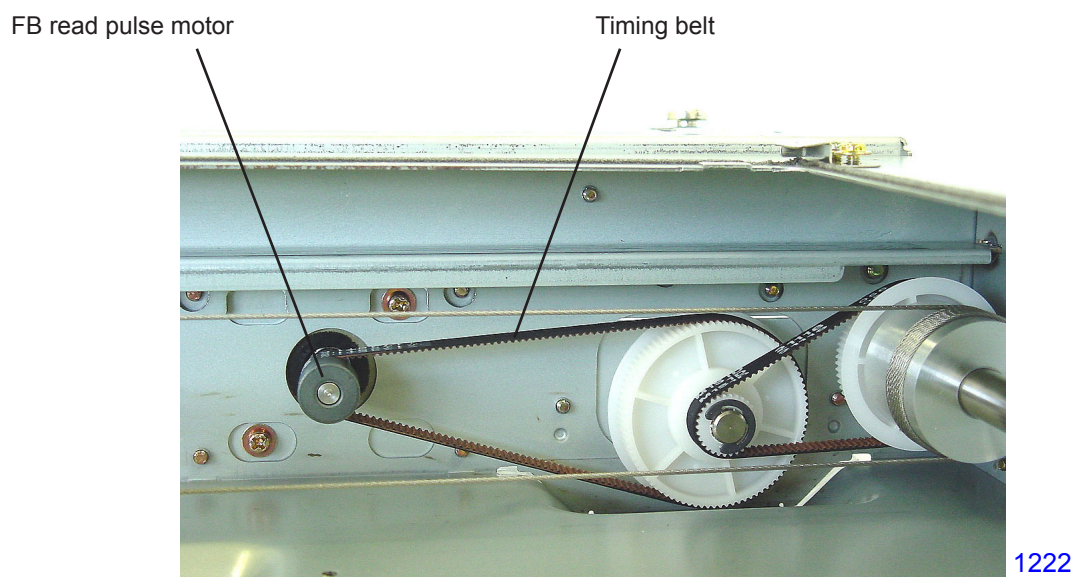
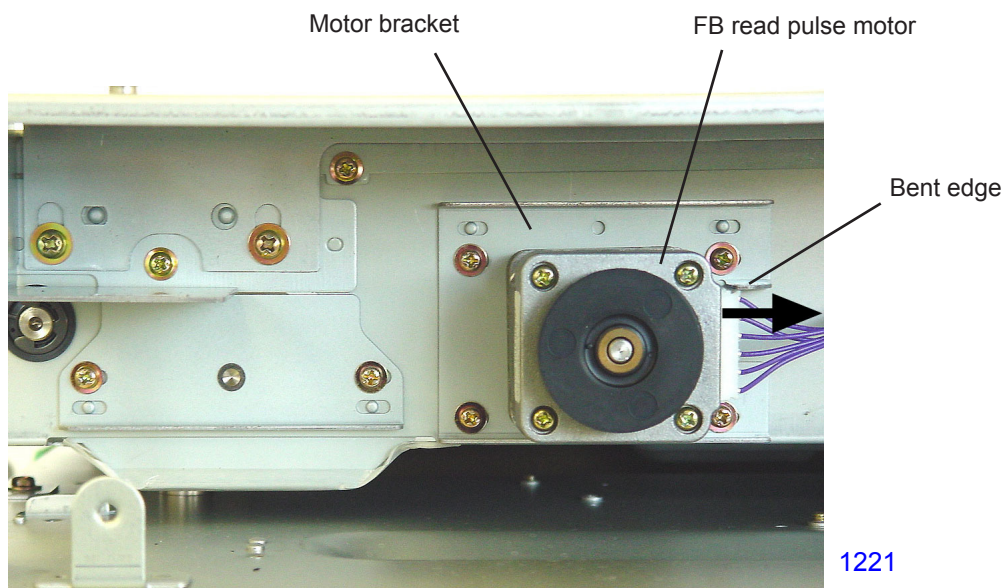


8. Removing the FB Read Pulse Motor

- (1) Switch off the machine power, remove the stage glass and scanner cover;rear.
- (2) Remove the mounting screws (M3x6: 4pcs) of the FB read pulse motor mounting bracket, unhook the timing belt located inside the scanner unit and detach the motor with the mounting bracket attached.
- (3) Detach the FB read pulse motor from the bracket by removing screws (M3x6: 2pcs).

< Precaution in Assembly >

Pull the bent edge of the motor bracket in the direction indicated by an arrow on the photograph below to apply adequate tension to the timing belt when tightening the mounting screws of the FB read pulse motor bracket onto the scanner unit.



Adjustment

1. FB Read Pulse Motor Speed Adjustment (Image Elongation & Shrinkage in Scanning)

Checks and adjustment

- (1) Set A3-size papers on the paper feed tray and place Test Chart No.11 on the stage glass. Make a master and print.
- (2) Lay the printed paper on top of the test chart original to check that the image elongation and shrinkage, if exists, is within plus/minus 1.4% compared from the top to the 350mm line of the test chart original.
- (3) If the elongation or shrinkage is over the specified range, make an adjustment using Test Mode No. 382 (FB Scanning Speed Adjustment).

Make sure that master-making elongation/shrinkage adjustment is already made prior to this scanning adjustment.

2. FB Scan Start Position Adjustment

Checks and adjustment

- (1) Set A3-size papers on the paper feed tray and place Test Chart No.11 on the stage glass. Make a master and print.
- (2) Check the prints and confirm that 4mm plus/minus 2mm of the scaled line on top of the test chart is erased on the prints (the scanning is omitted for this distance).
- (3) If the scanning start position is out of the specified range, make an adjustment using Test Mode No. 381 (FB Scan Start Position Adjustment).

3. FB Horizontal Scan Position Adjustment

Checks and adjustment

- (1) Set A3-size papers on the paper feed tray and place Test Chart No.14 on the stage glass. Make a master and print.
- (2) Look at the master made on the print drum. Confirm that all the [e] images are made on the right and left of the master on the print drum.
- (3) If any of the [e] images are omitted, make an adjustment using Test Mode No. 380 (FB Horizontal Scan Position Adjustment).

MEMO

CHAPTER 13: AF SCANNING SECTION

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Mechanism

1. AF Original Set Mechanism

When an original is set along the original guide fence and pushed up against the original stopper gate, the AF original detection sensor turns ON (receives light) and the Master/Print indication on the panel changes to [Ready to make master].

After a set length of time, the AF read pulse motor operates in the reverse direction, lowering the pickup roller in the direction indicated by the arrow and withdrawing the original stopper gate upward. (In this step, the one-way clutch incorporated between the registration-roller gear and registration-roller shaft prevents the registration roller from rotating.)

When the pickup roller descends and presses against the original, the pickup roller and original stripper roller rotate in the original transport direction, and a single original is fed forward by the action of the original stripper roller and the original stripper pad. This activates the AF original registration sensor (light blocked), and the edge of the original is stopped by the stationary registration roller.

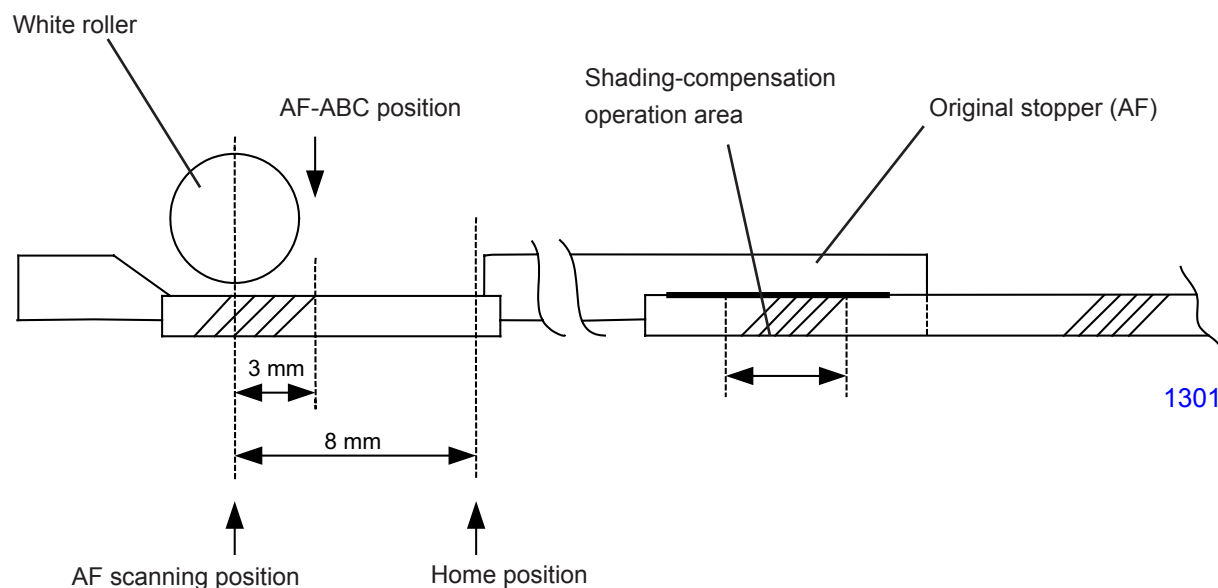
When the AF original registration sensor turns ON, after a preset length of time the AF read pulse motor starts rotating in the forward direction. This raises the pickup roller and turns the registration roller, the two read rollers, the white roller, and the original ejection roller, all of which are linked by the timing belt, in the feed direction.

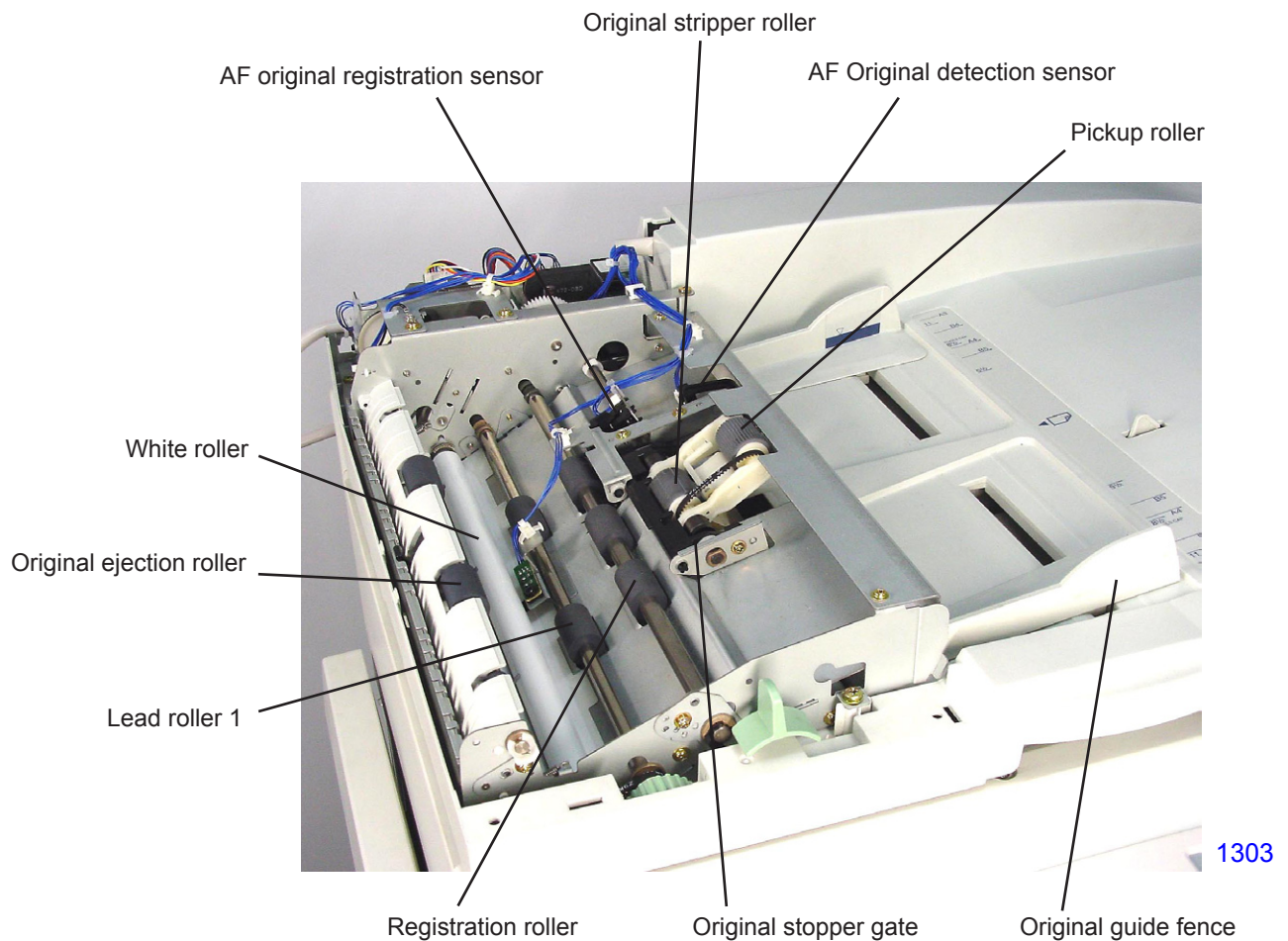
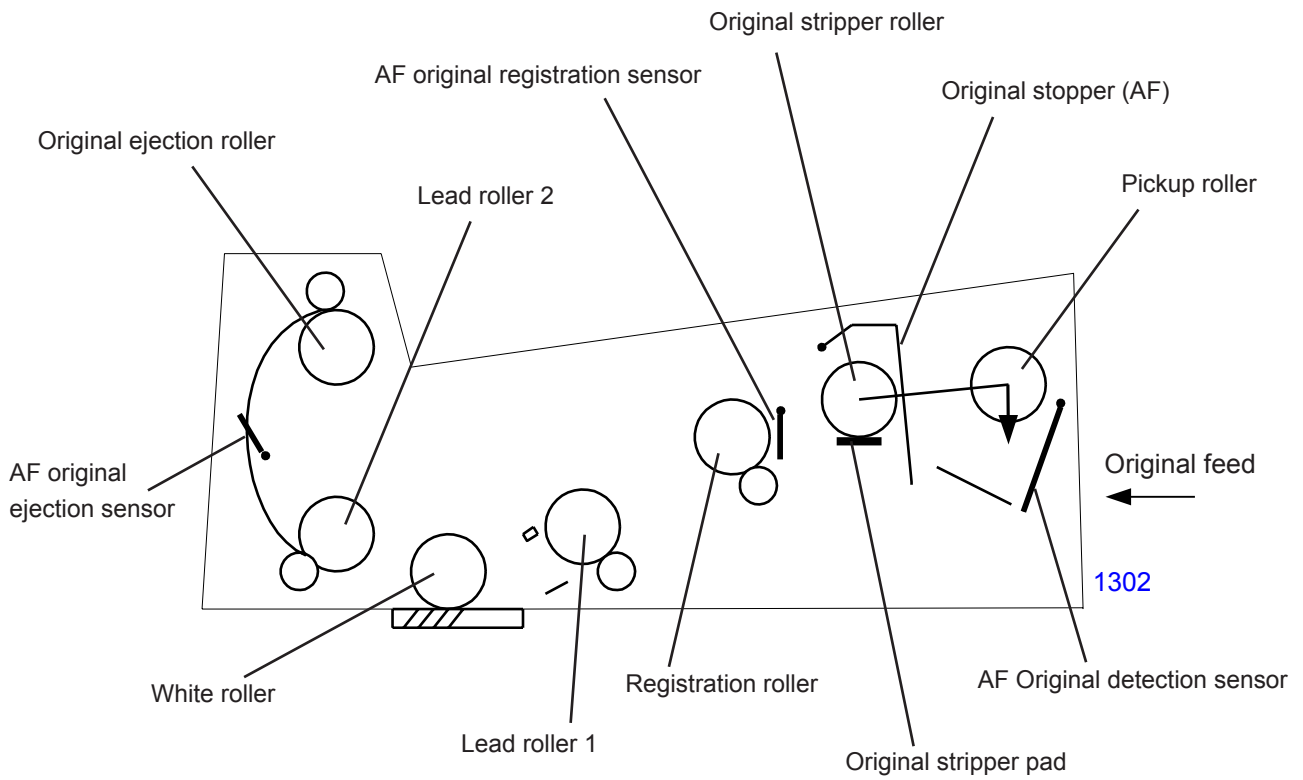
The original stops temporarily when it moves 90 mm from the original set position.

Meanwhile, when the AF original detection sensor turns ON, the lamp carriage in the scanner unit conducts a series of operations from lamp illumination to shading compensation, then moves to the AF read position and stops in the standby mode.

If the Start key is not pressed within 60 seconds, the lamp turns off and the lamp carriage returns to the home position. Only when the Start key is pressed, the shading compensation operation is conducted (as well as the auto-base-control operation if the original scanning density is set to AUTO), and the scanning operation begins.

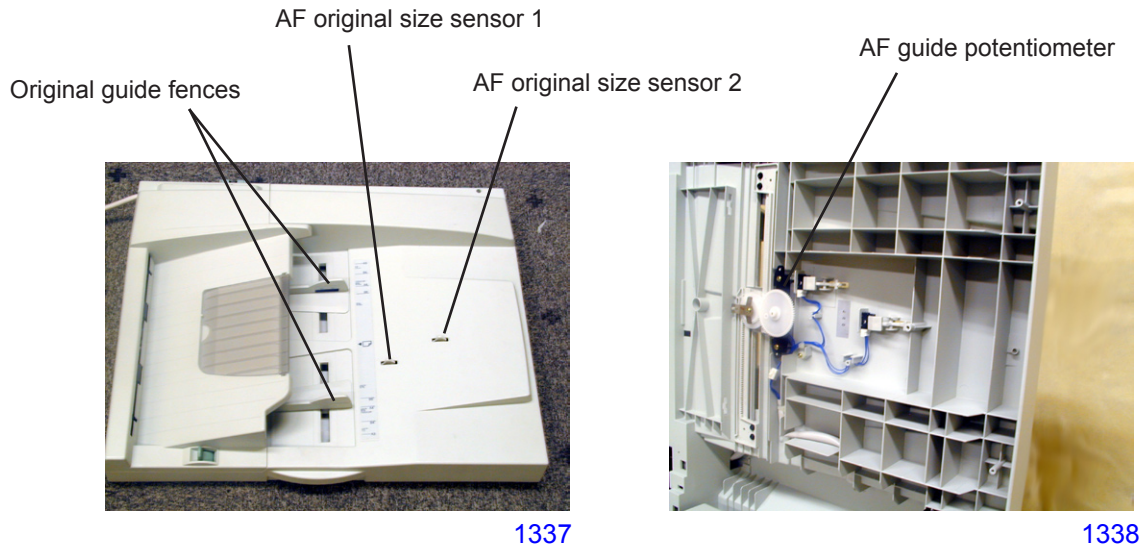
When the Start key is pressed within 60 seconds, the scanning operation starts immediately if the original scanning density is not set to AUTO. If it is set to AUTO, the lamp carriage returns to the home position, and the shading-compensation and auto-base-control operations are performed before the scanning operation starts.





2. AF Original Size-Detection Mechanism

The width of the original is detected by the AF guide potentiometer linked to original guide fences, which are aligned with the original. The length of the original is detected by AF original size sensor 1 and AF original size sensor 2.



3. AF Set Detection Mechanism

Whether the AF is closed over the stage glass or not is checked by the AF cover set sensor.

The AF cover set sensor is attached on the AF unit.



4. AF Original Scanning Mechanism (with Automatic Base Control)

(This operation only occurs when the original scanning density is set to [Auto].)

Once the AF original set operation is complete, pressing the Start key moves the lamp carriage to the shading position. After performing the shading-compensation operation, the lamp carriage moves to the AF-ABC position. Meanwhile, the AF read pulse motor rotates in the forward direction, rotating the registration roller, the two read rollers, the white roller, and the original ejection roller in the feed direction. After the AF original IN sensor turns ON (light blocked), the paper is fed for a distance of 22.5 mm and stops. At this position (AF-ABC position), the image sensor scans the surface density of the original. Then, the flatbed read pulse motor moves the lamp carriage back by 3 mm in the return direction (to the AF read position).

The AF read pulse motor immediately rotates in the forward direction and, at the same time, the print signal turns ON and the original scanning operation starts.

When a preset length of time elapses after the AF original IN sensor turns OFF (receives light) due to the passing of the original, the print signal turns OFF. As soon as the scanning operation is complete, the AF read pulse motor starts operating at high speed.

When the AF original ejection sensor turns OFF, the original is sent a preset distance and then the AF read pulse motor stops. The lamp carriage returns to the home position, and the AF read operation ends.

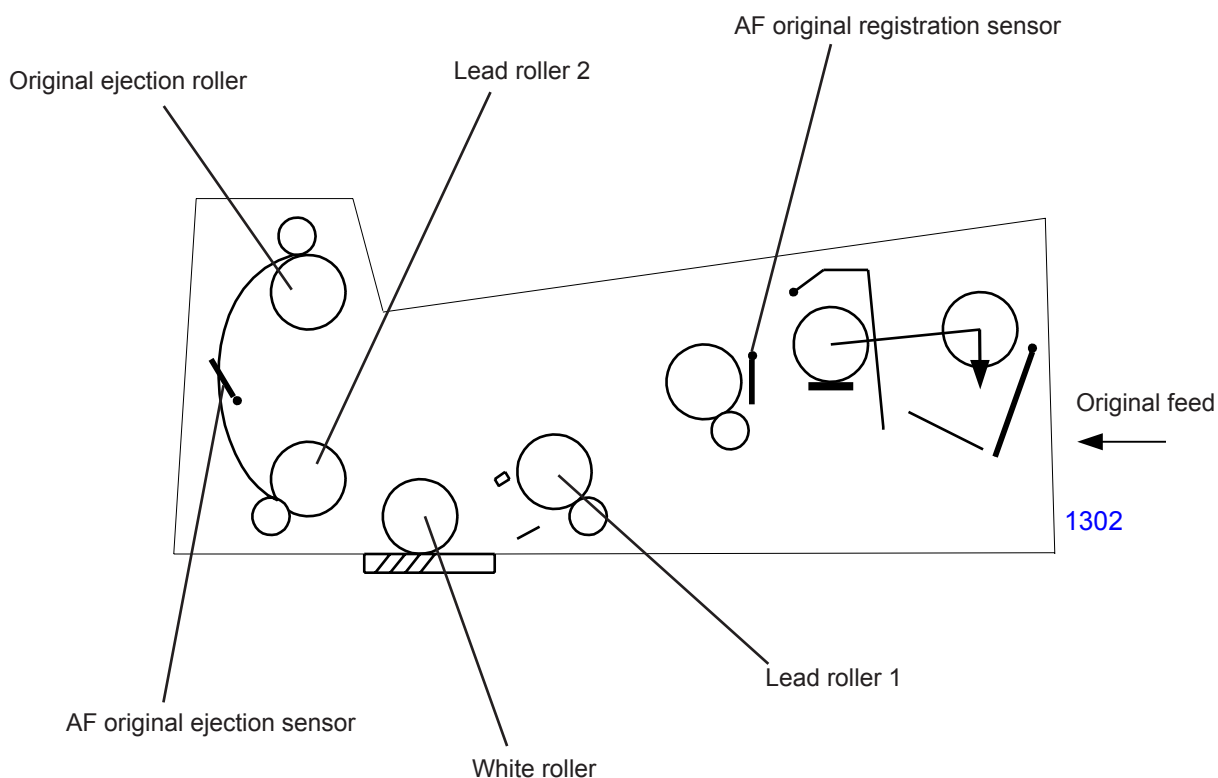
The auto-base control function is inactive in the Photo, mixed Text/Photo, and Dot-screening modes.

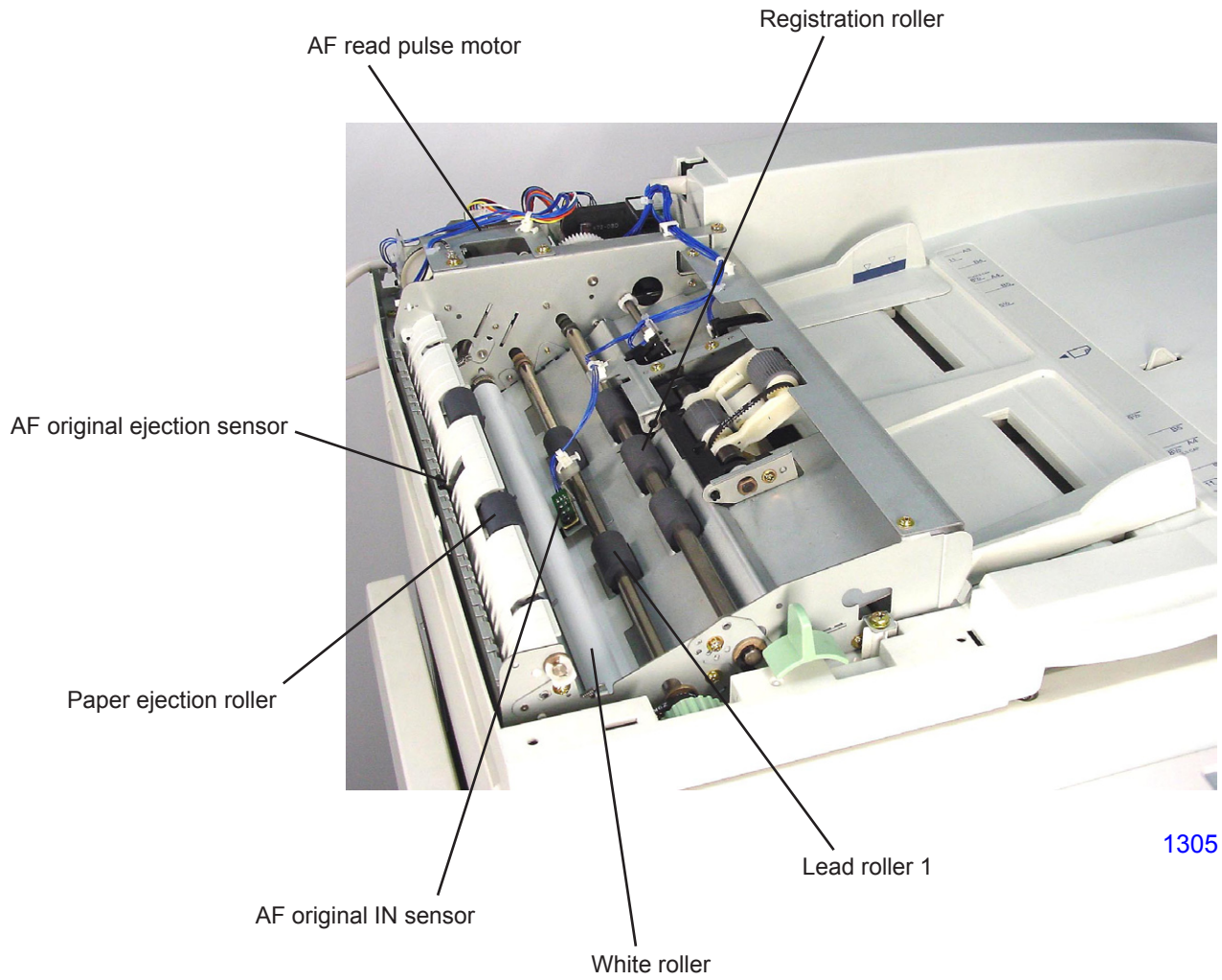
5. AF Original Scanning Mechanism

When the Start key is pressed after the AF original set operation is complete, the AF read pulse motor rotates in the forward direction, turning the registration roller, the two read rollers, the white roller, and the paper ejection roller in the feed direction. When the AF original IN sensor turns ON (light blocked), the original is sent a distance of 25.5 mm, and then the print signal turns ON and the original scanning operation starts. (The pickup roller returns to the standby position.)

When a preset length of time has elapsed after the AF Original IN sensor turns OFF (receives light) due to the passing of the original, the print signal turns OFF and, at the same time, the AF read pulse motor starts operating at high speed.

After the AF original ejection sensor turns OFF, the original is sent a preset distance, and then the AF read pulse motor stops. The lamp carriage returns to the home position, and the AF read operation ends.



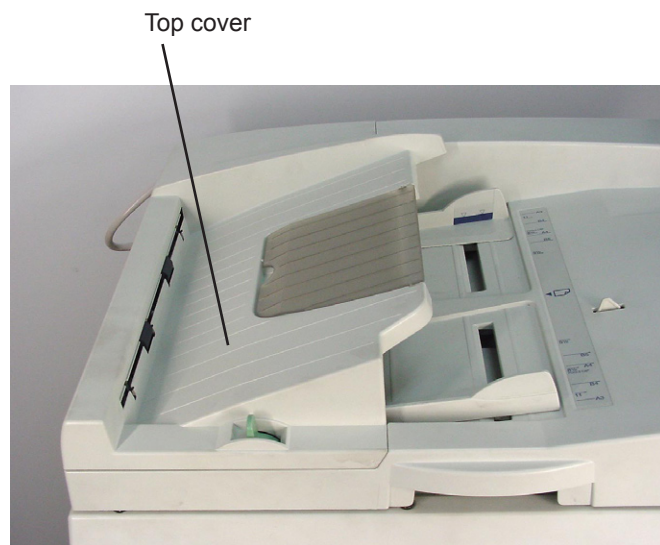


1305

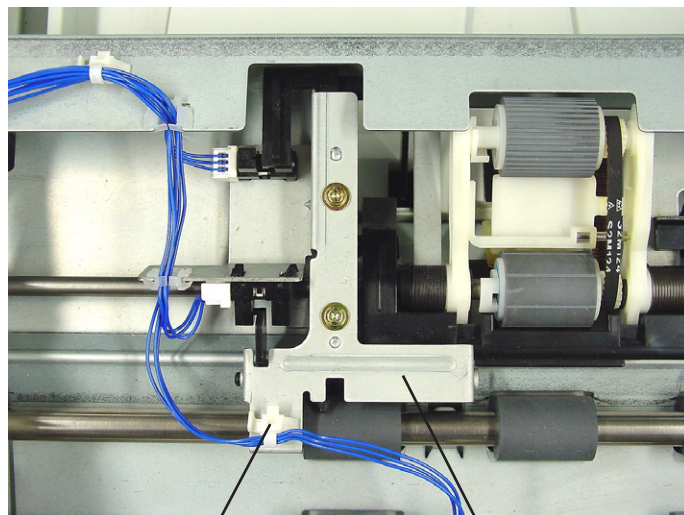
Removal and Assembly

1. Removing the Original Pickup Assembly

- (1) Remove the top cover by loosening the screws (M4 x 6: 3 pcs) on the front of the top cover and removing the screws (4 x 10: 2 pcs) from the rear.
- (2) Disconnect the two connectors and the reusable band, remove the screws (M3 x 4: 2 pcs), and detach the sensor-bracket assembly.



1306

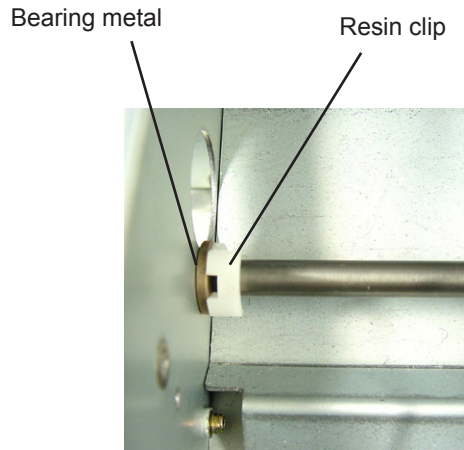


1307

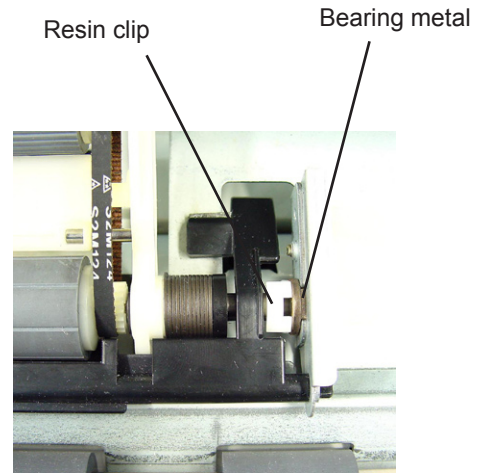
Reusable band

Sensor-bracket assembly

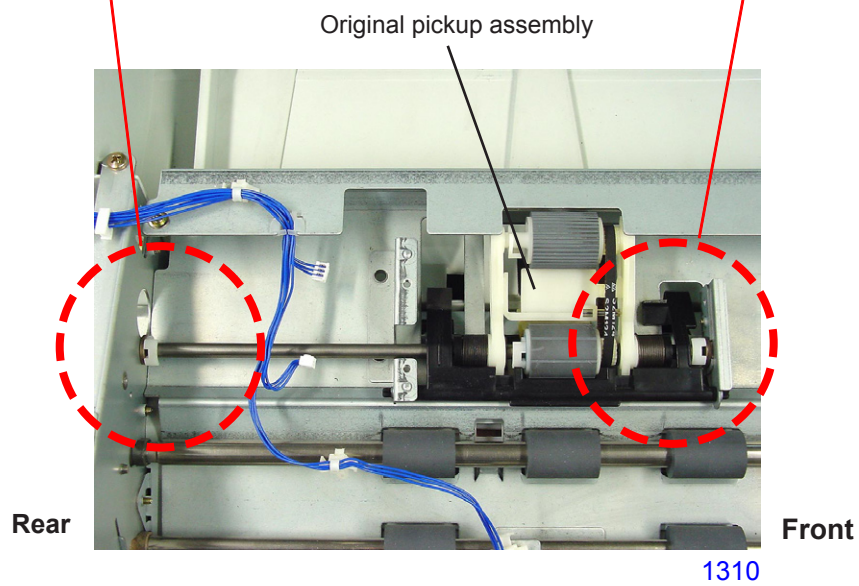
- (3) Remove the resin clips from both sides, pull the bearing metals toward the inside, and remove the original pickup assembly by passing the drive gear on the rear of the assembly through the hole on the side panel.



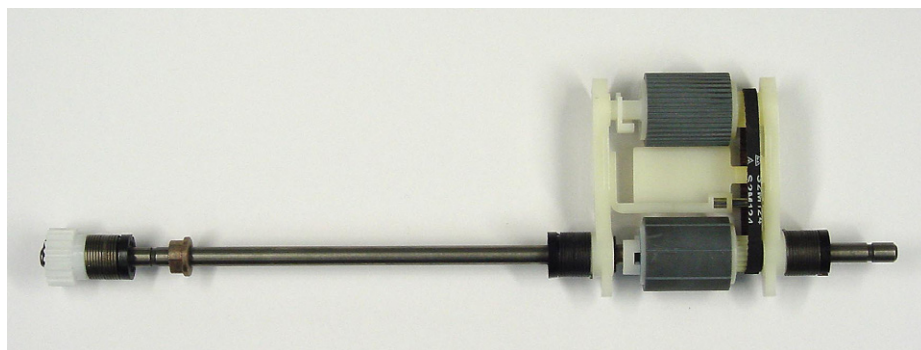
1308



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1310

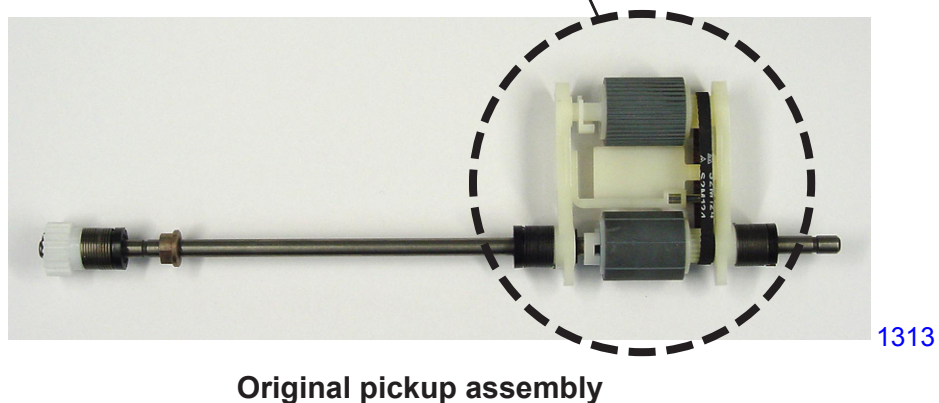
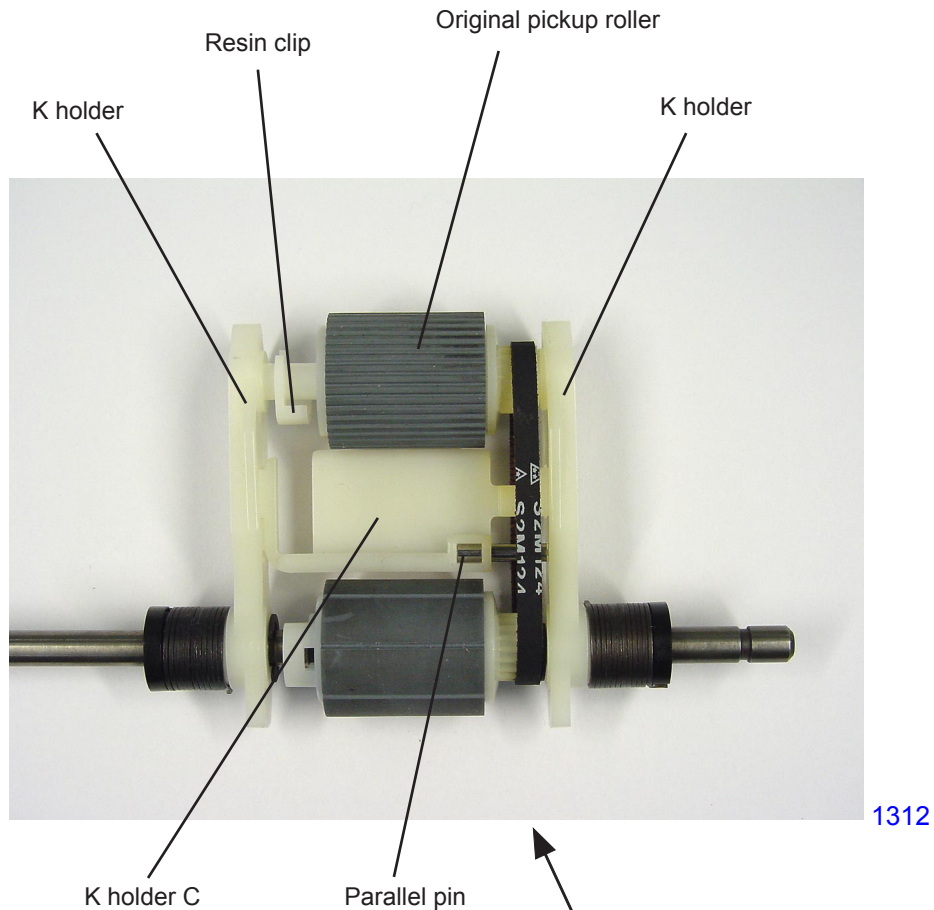


Original pickup assembly

1311

2. Removing the Original Pickup Roller

- (1) Remove the original pickup assembly (refer to the removal instructions in this Chapter).
- (2) Remove the resin clip, open the end of the K holder, and remove the pickup roller. (Note that the K holder C and parallel pin may fall during disassembly.)



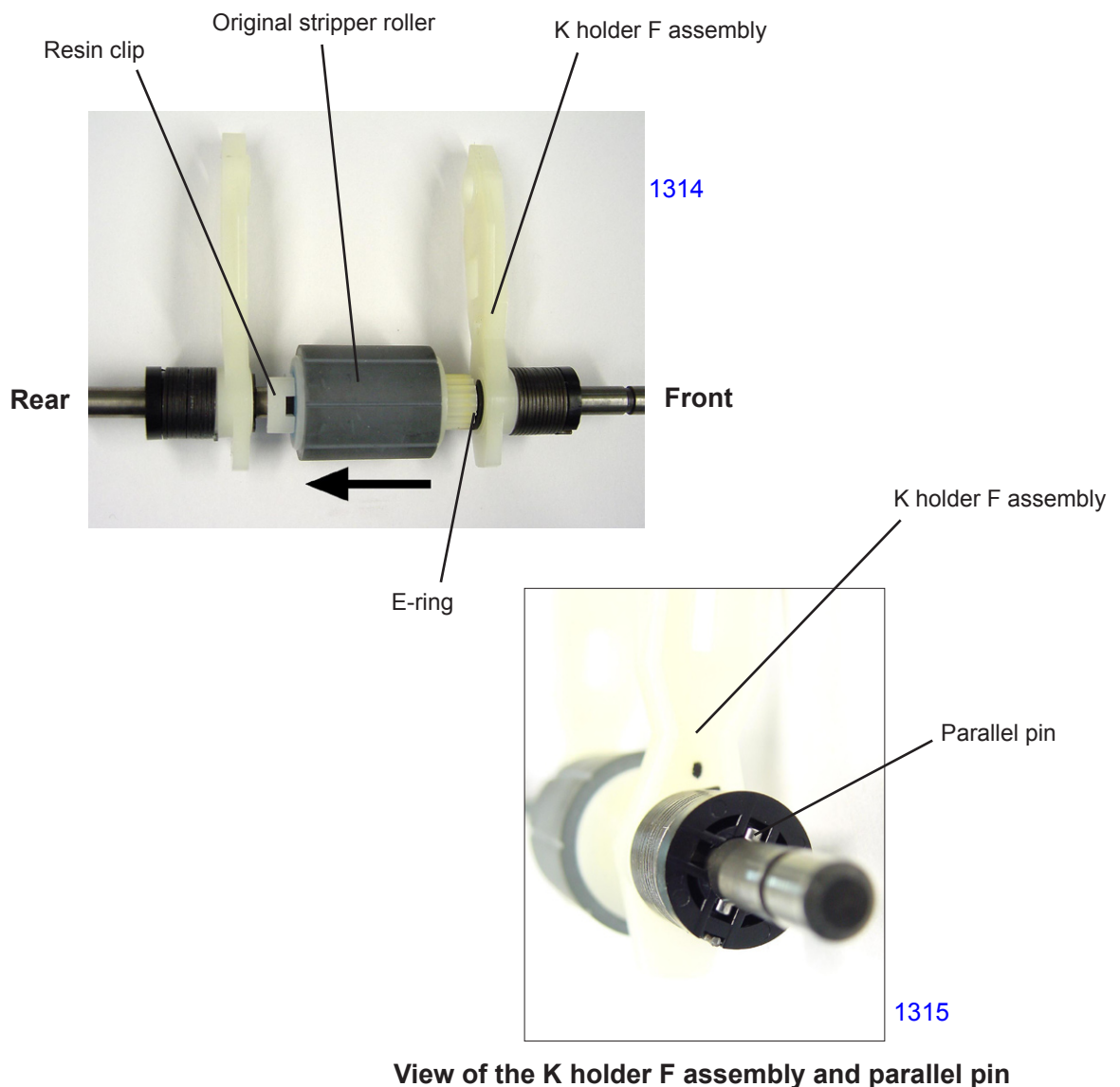
3. Removing the Original Stripper Roller

- (1) Remove the original pickup assembly (refer to the removal instructions in this Chapter).
- (2) Remove the K holder C, parallel pin, and pickup roller (refer to the removal instructions in this Chapter).
- (3) Remove the resin clip from the rear of the original stripper roller, and move the original stripper roller in the direction indicated by the arrow.
- (4) Remove the E-ring, move the K holder F assembly slightly in the direction indicated by the arrow, pull out the parallel pin holding the K holder F assembly in place from the shaft, and remove the K holder F assembly.
- (5) Remove the original stripper roller.

[Precautions in Reassembly]

When installing the parallel pin to hold the K holder F assembly in place, be sure to insert it into the shallower groove on the K holder F assembly.

The original stripper roller must be installed with the correct orientation. Be sure to position the gear side on the front of the machine.



View of the K holder F assembly and parallel pin

4. Removing the Original Stripper Pad Assembly

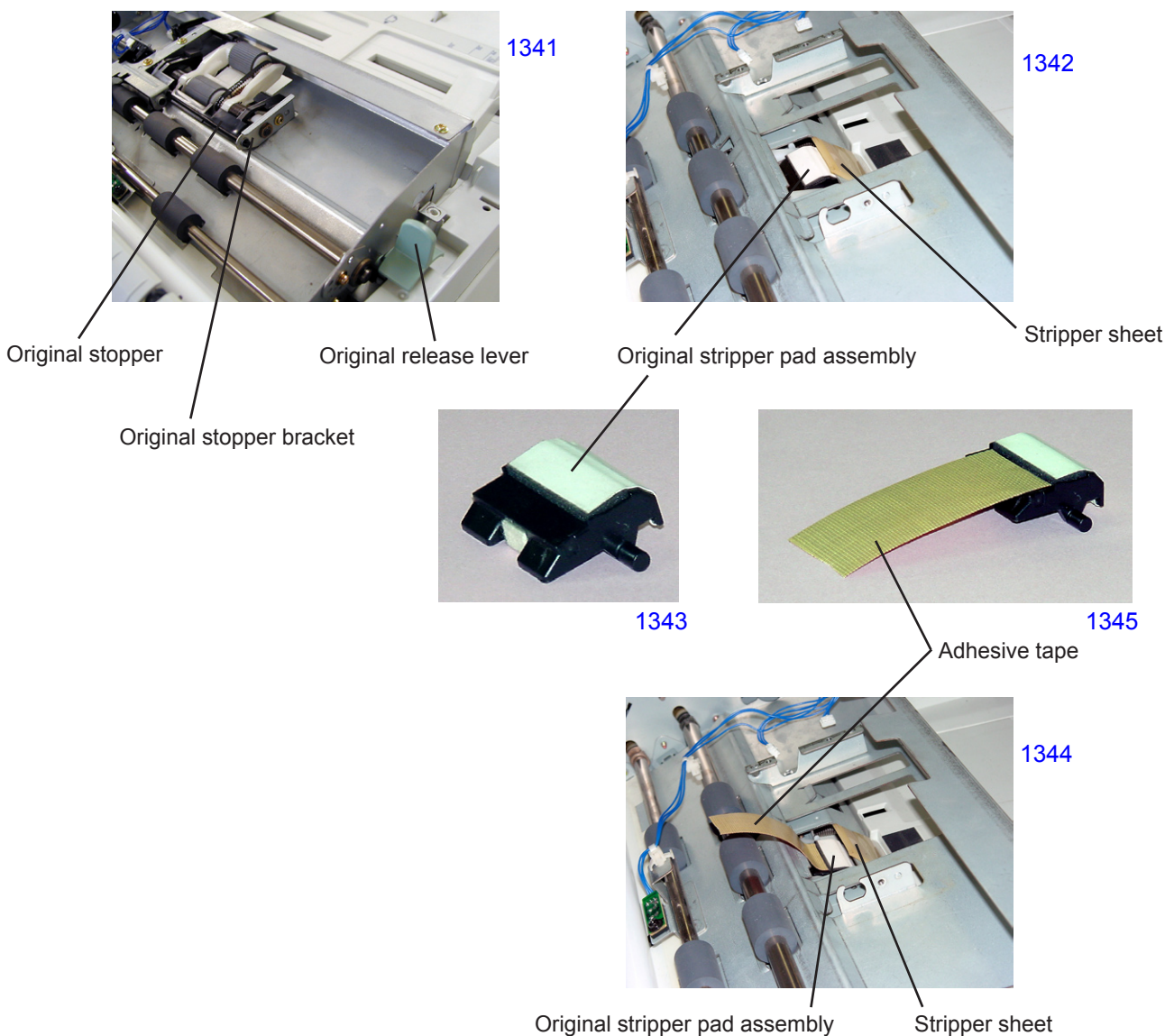
- (1) Remove the original pickup assembly (refer to the removal instructions in this Chapter).
- (2) Detach original stopper bracket by removing one screw (M3 x 4), and remove the original stopper.
- (3) Using the original release lever, elevate down the original stripper section.
- (3) Being careful not to drop the spring under the original stripper pad assembly, slide back the assembly to disengage it out from the hooks and then take it out from the AF unit through the opening.

[Precautions in Reassembly]

In putting the original stripper pad assembly back into the AF unit, place an adhesive tape on the assembly (ref: photograph), and elevate down the original stripper section by using the original release lever. Push the assembly down into the opening under the stripper sheet and attach the spring firmly onto the assembly.

Use the attached adhesive tape to pull the original stripper pad assembly to hook it onto the AF unit.

Remove the adhesive tape once the original stripper pad assembly is fixed in its position.

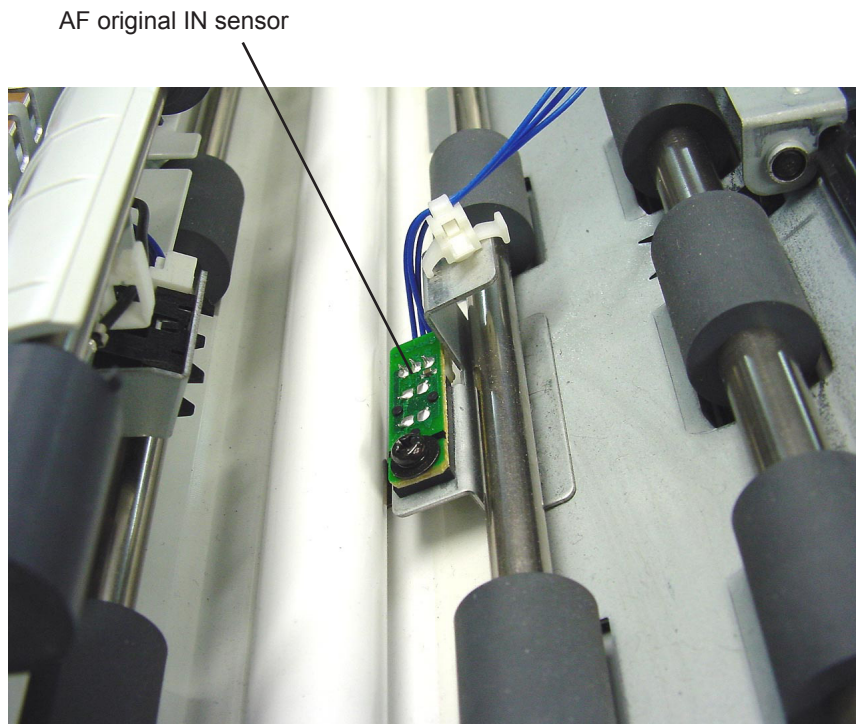


5. Removing the AF Original IN Sensor

- (1) Remove the top cover by loosening the screws (M4 x 6: 3 pcs) on the front of the top cover and removing the screws (M4 x 10: 2 pcs) from the rear.
- (2) Remove the screw (M3 x 8: 1 pc), disconnect the connector, and remove the AF original IN sensor.

[Precautions in Reassembly]

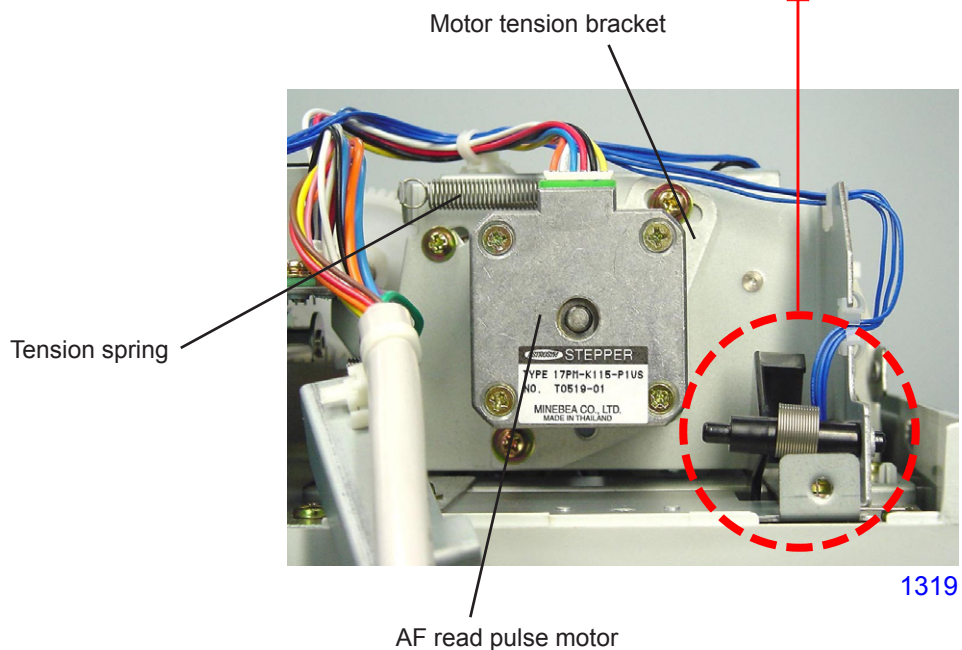
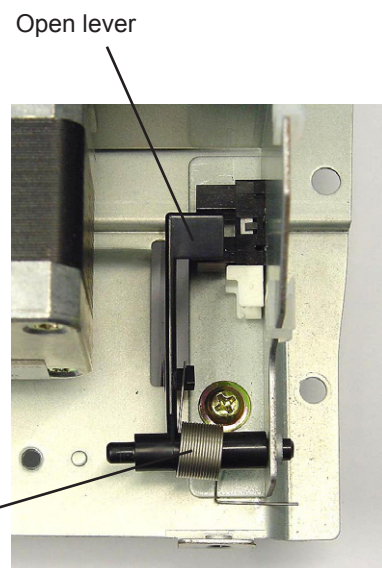
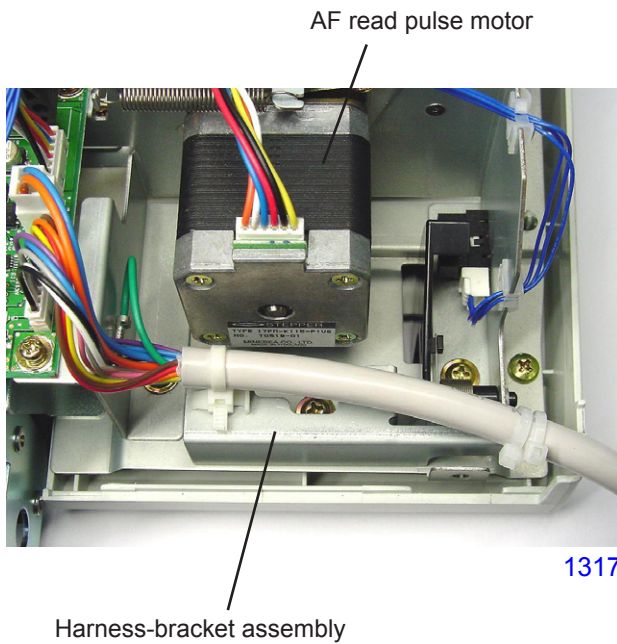
Following reassembly, adjust the AF original IN sensor by using Test Mode No. 3044 (Original-IN-Sensor Sensitivity Adjustment).



1316

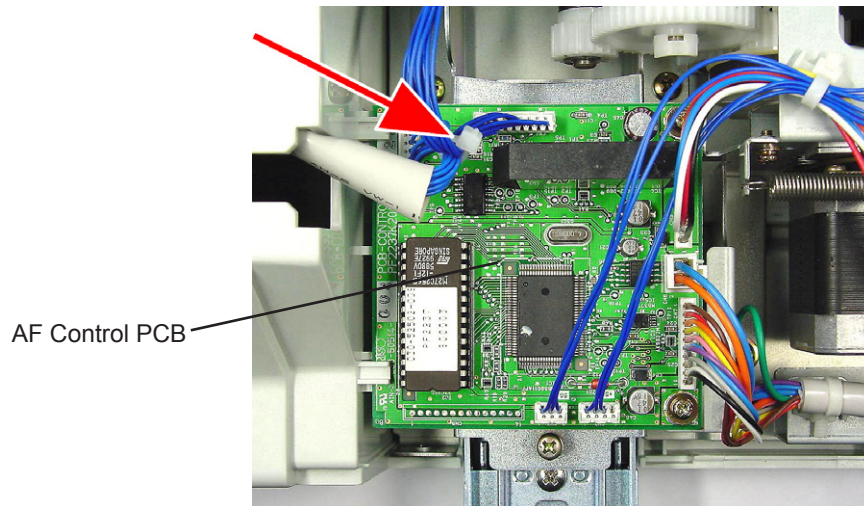
6. Removing the AF Read Pulse Motor

- (1) Remove the top cover by loosening the screws (M4 x 6: 3 pcs) on the front of the top cover and removing the screws (M4 x 10: 2 pcs) from the rear.
- (2) Remove the screw (M4 x 6: 1 pc), and move the harness-bracket assembly to the side.
- (3) Remove the open lever together with the open-lever spring.
- (4) Detach the tension spring, remove the mounting screws (M3 x 6: 2 pcs), and then remove the AF read pulse motor together with the motor tension bracket.

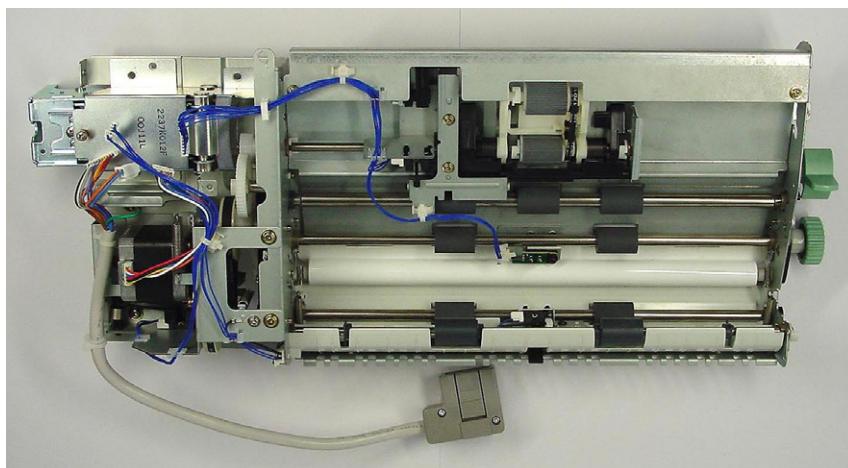


7. Removing Other Rollers

- (1) Detach the AF unit from the machine.
- (2) Remove the top cover by loosening the screws (M4 x 6: 3 pcs) on the front of the top cover and removing the screws (M4 x 10: 2 pcs) from the rear.
- (3) Disconnect the connector, and remove the Control PCB (M3 x 6: 2 pcs).
- (4) Cut the band indicated by the **arrow** in the photograph, remove the mounting screws (M4 x 10: 7 pcs; M4 x 10 + Washer: 2 pcs on the front), and detach the AF mechanism unit.



1320



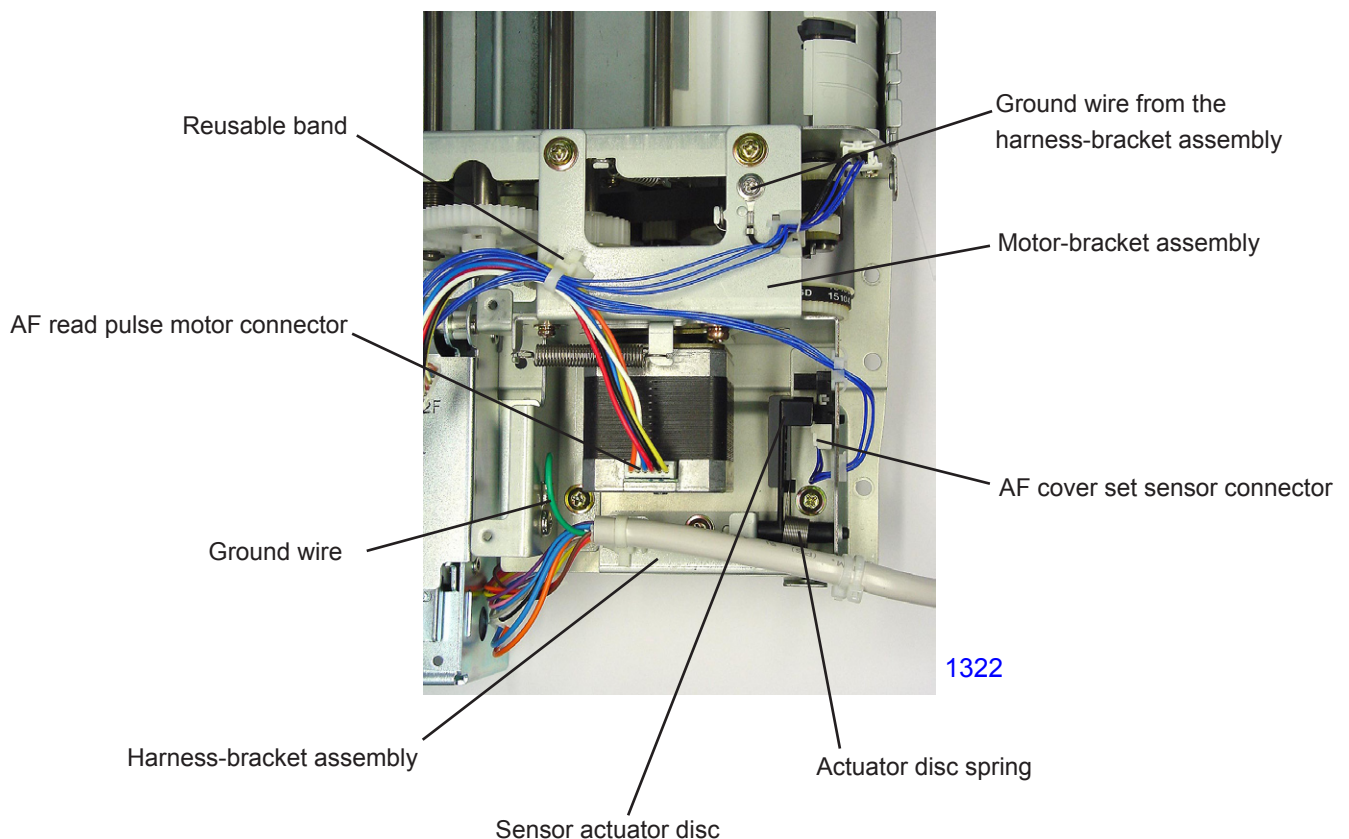
1321

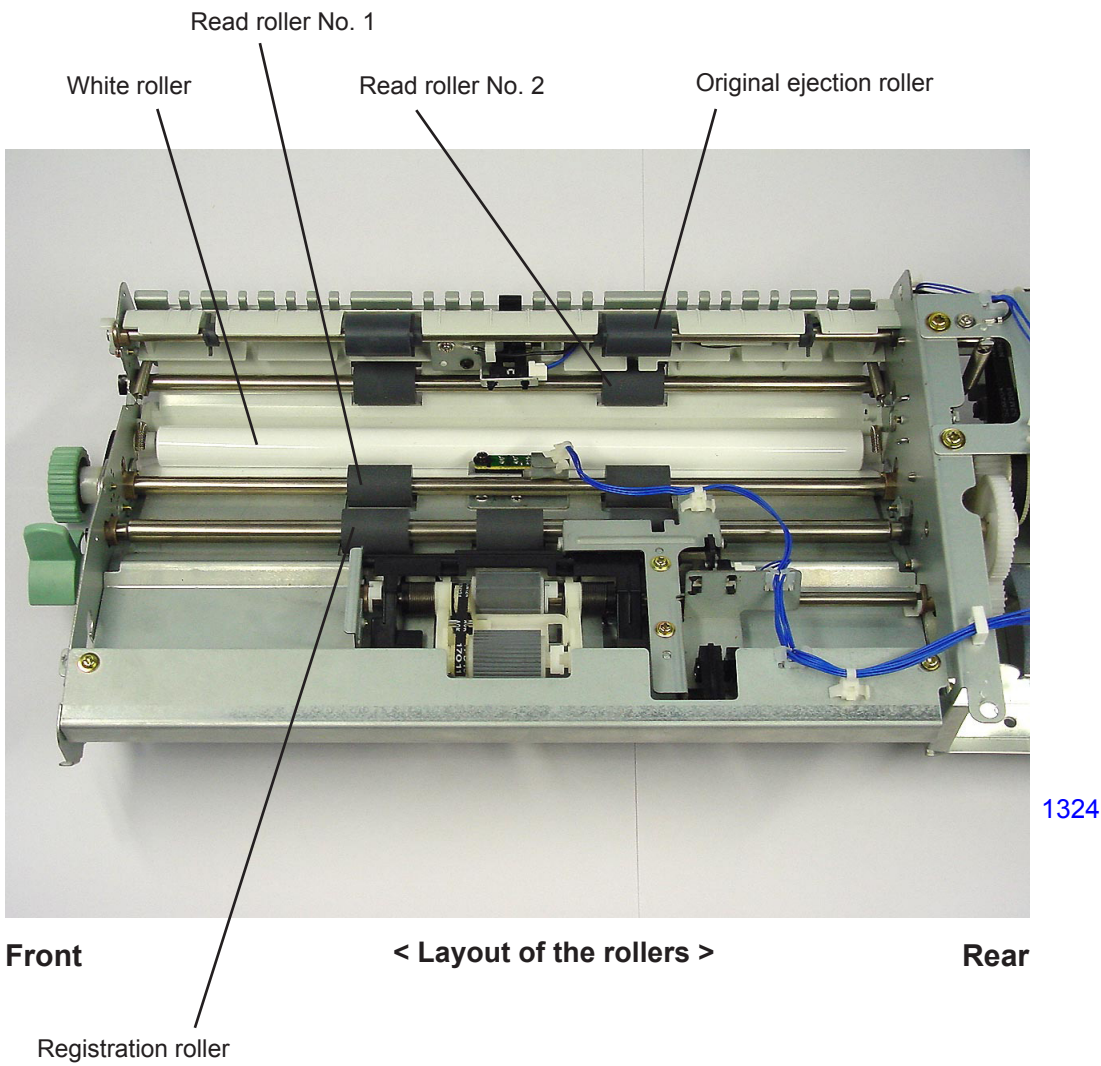
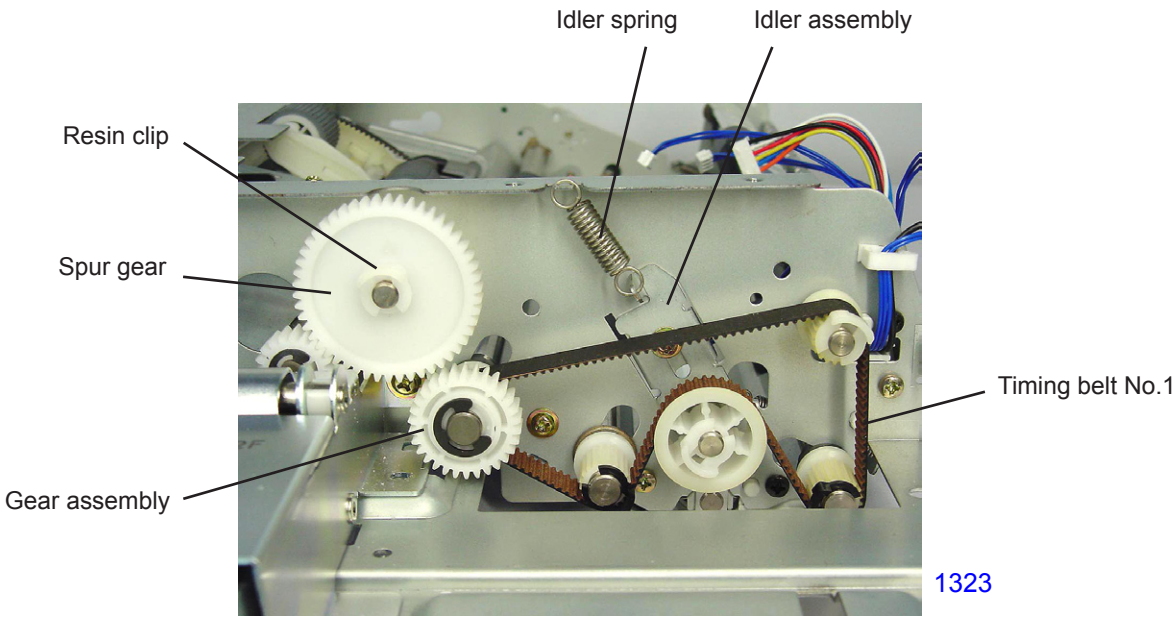
AF mechanism unit

- (5) Disconnect the AF cover set switch connector and AF read pulse motor connector, and detach the ground wire by removing screw (M3 x 6: 1 pc).
- (6) Remove the reusable band, detach the harness from the three harness clamps, and move the harness to the side.
- (7) Detach the ground wire from the harness-bracket assembly by removing screw (M4 x 6: 1 pc).
- (8) Detach the harness-bracket assembly by removing screw (M4 x 6: 1 pc).
- (9) Remove the sensor actuator disc together with the actuator disc spring.
- (10) Detach the motor-bracket assembly by removing screws (M4 x 6: 4 pcs).
- (11) Loosen the idler assembly securing screws, and remove the idler spring.
- (12) Remove the resin clip, spur gear, E-ring, gear assembly, and timing belt No.1, in that order.

[Precautions in Reassembly]

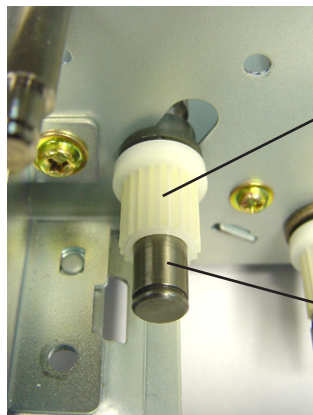
The gear assembly has a built-in one-way clutch. Be sure to install the gear assembly with the stamped face toward the front.





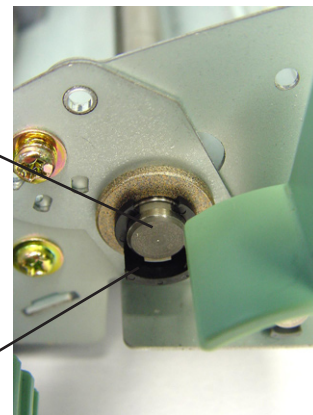
Removing the registration roller

- (13) Remove the timing pulley from the rear side of the roller. Also remove the parallel pin at the same time.
- (14) Remove the E-ring, and detach the bearing metal.
- (15) Remove the resin clip from the front side of the roller, and detach the bearing metal.
- (16) Remove the registration roller.



Timing pulley
Registration roller

1325

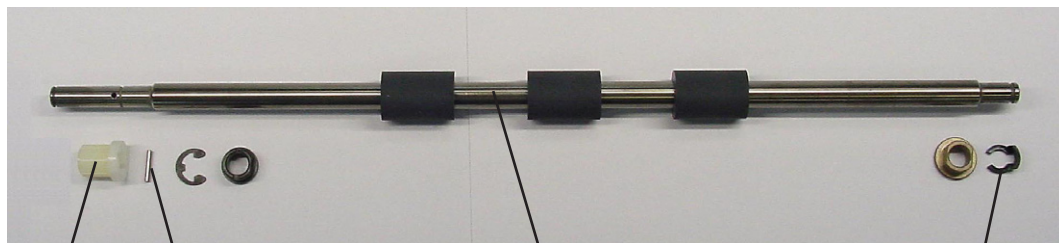


Registration roller
Resin clip

1326

Rear

Front



1327

Timing pulley

Parallel pin

Registration roller

Resin clip

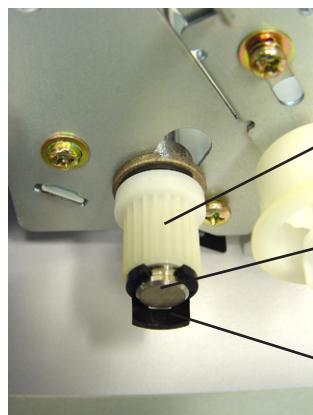
Removing the read roller No. 1

* Before removing the read roller No. 1, detach the registration roller.

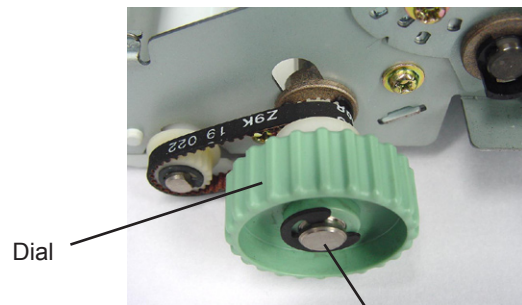
- (13) Remove the resin clip from the rear side of the roller, and detach the timing pulley. Also remove the parallel pin at the same time.
- (14) Remove the E-ring, and detach the bearing metal.
- (15) Remove the E-ring from the front side of the roller, and detach the dial. Also remove the parallel pin at the same time.
- (16) Remove the timing-pulley assembly, remove the E-ring, and detach the bearing metal.
- (17) Remove the read roller No. 1.

[Precautions in Reassembly]

The timing-pulley assembly has a built-in one-way clutch. Be sure to install the gear assembly with the stamped face toward the front.

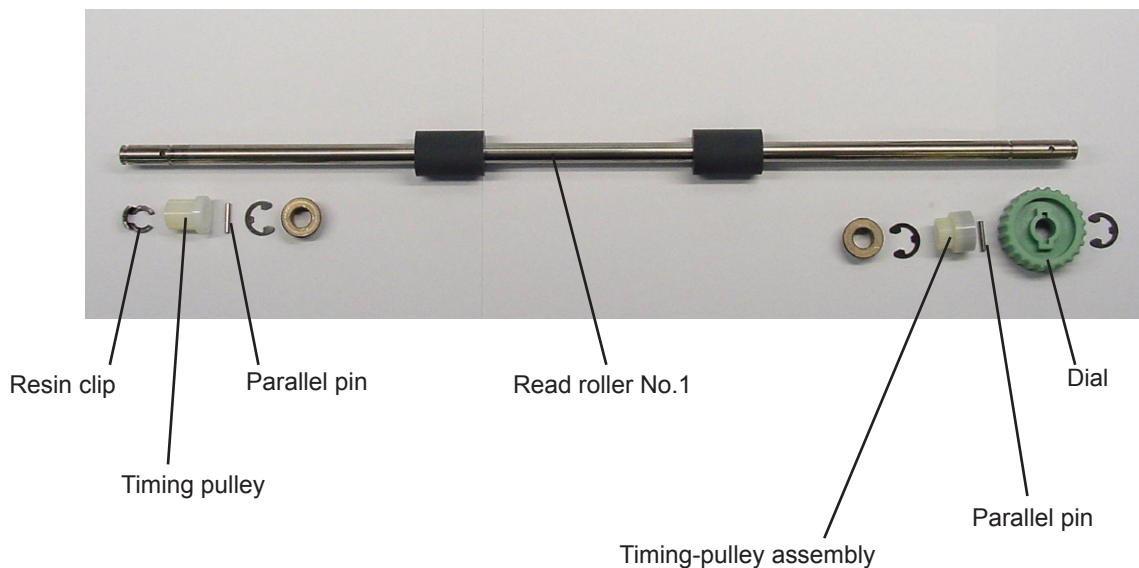


1328



1329

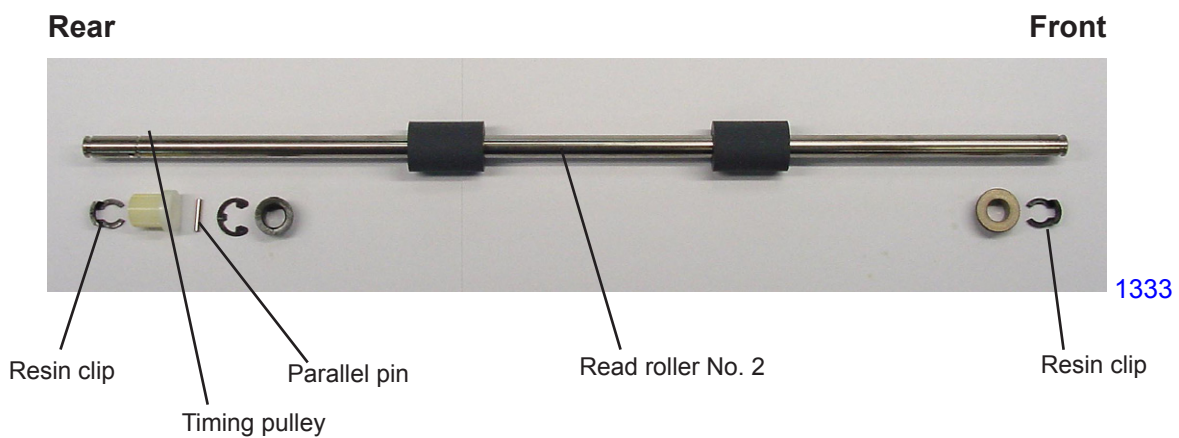
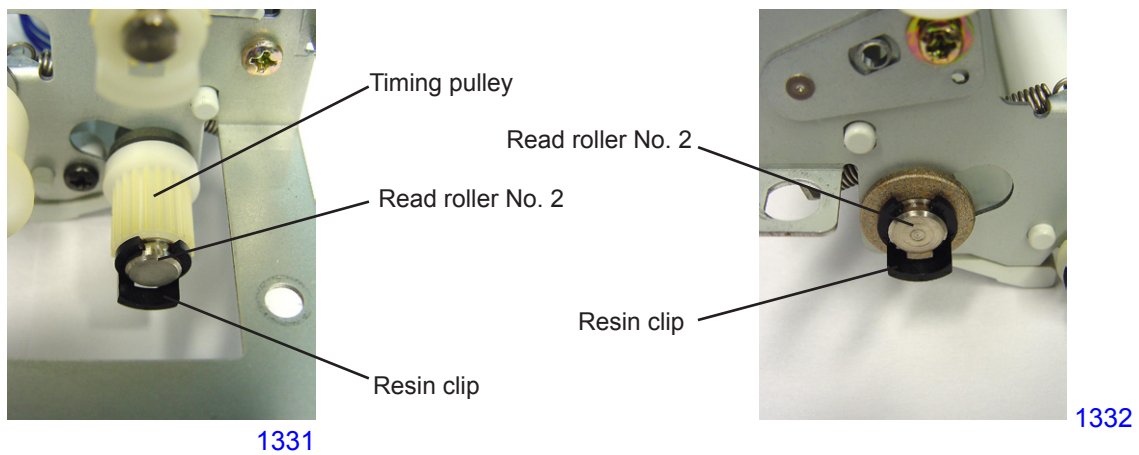
Read roller No.1

Rear**Front**

1330

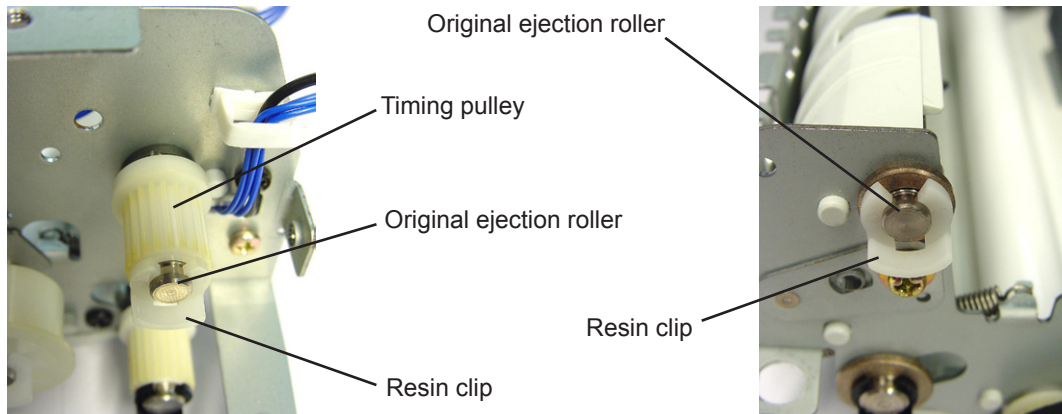
Removing the read roller No. 2

- (13) Remove the resin clip from the rear side of the roller, and detach the timing pulley. Also remove the parallel pin at the same time.
- (14) Remove the E-ring, and detach the bearing metal.
- (15) Remove the resin clip from the front side of the roller, and detach the bearing metal.
- (16) Remove the read roller No. 2.



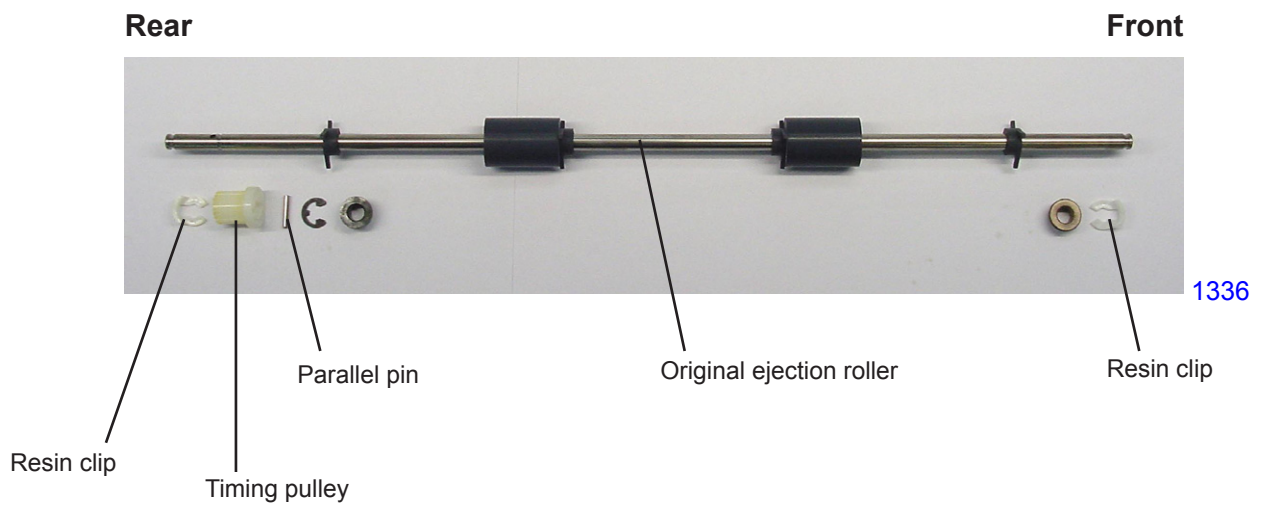
Removing the original ejection roller

- (13) Remove the resin clip from the rear side of the roller, and detach the timing pulley. Also remove the parallel pin at the same time.
- (14) Remove the E-ring, and detach the bearing metal.
- (15) Remove the resin clip from the front side of the roller, and detach the bearing metal.
- (16) Remove the original ejection roller.



1334

1335



1336

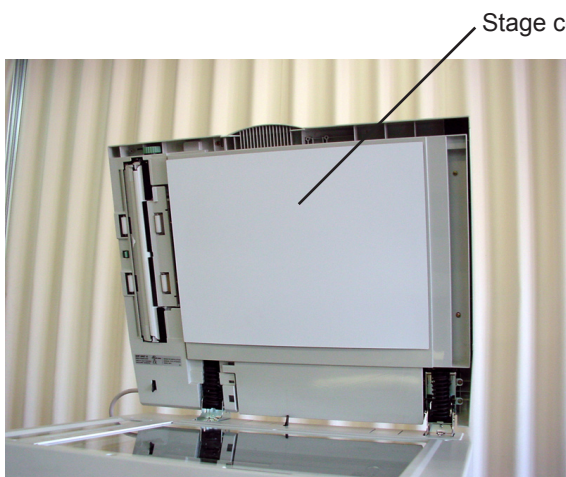
8. Removing the AF Original Guide Fence Potentiometer Assembly

- (1) Open the AF unit.
- (2) Detach the stage-cover assembly by removing screws (M3 x 10+Plastic washer: 2 pcs).
- (3) Detach the bottom cover by removing screw (M4 x 6: 1 pc).
- (4) Unplug connector, and remove the AF original guide fence potentiometer assembly by removing screws (M3 x 10: 2 pcs).

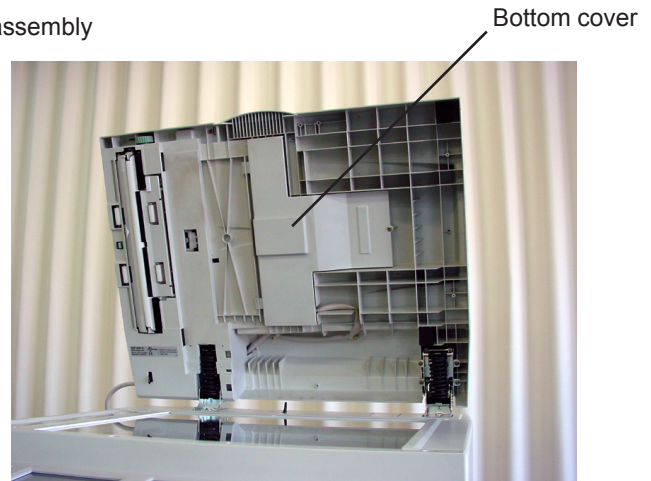
[Precautions in Reassembly]

Before putting back the potentiometer assembly, slide the original guide fences to the innermost (closed) position, and rotate the gear of the potentiometer assembly in the counterclockwise direction all the way. Then rotate it back one tooth and mount the potentiometer assembly back on the AF unit.

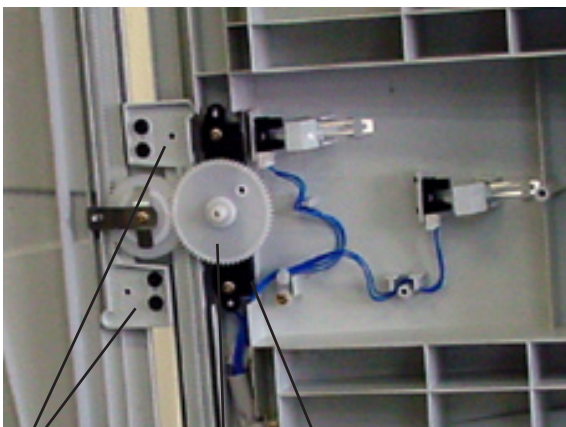
After the assembly is back on the AF unit, activate test mode No.3045 [AF-guide min.-width VR value] with the original guide fence closed all the way. Then activate test mode No.3046 [AF-guide max.-width VR value] with the original guide fence opened wide all the way.



1346



1347

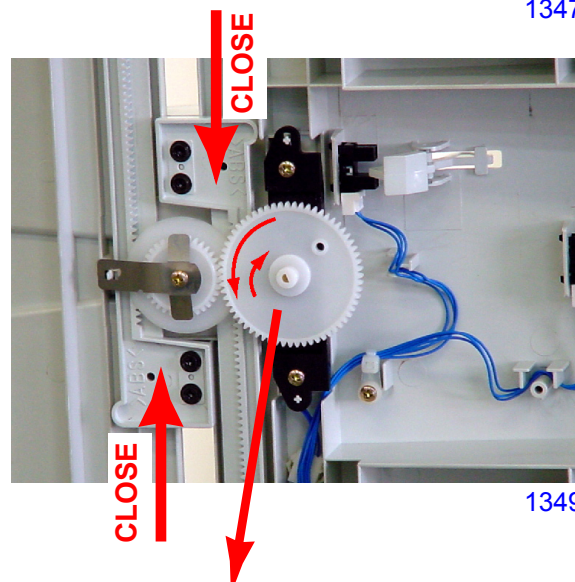


1348

Original guide fence

Potentiometer assembly

Gear



1349

1. Close the original guides all the way in.
2. Rotate the potentiometer in the counterclockwise direction all the way.
3. Then return it in the clockwise direction for one tooth and join the gears, and screw it back on the AF unit.

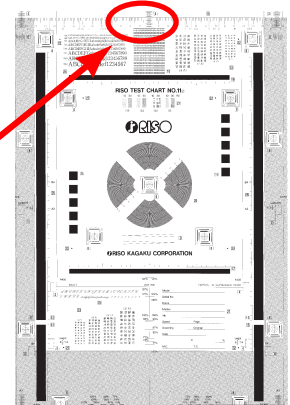
Adjustment

1. AF Scan Start-Position Adjustment

Checks and procedure

- (1) Place A3 size printing paper on the paper feed tray. Make 1 to 1 size master using **test chart No.11** on the AF unit, and make prints.
- (2) Examine the prints to confirm that the scanning start position is at $5\text{ mm} \pm 2\text{ mm}$ on the top vertical scale on the test chart No.11 printed image.
- (3) If the scanning start position does not fall within above specification, make an adjustment using test mode No.3073 (AF Scan Start Position Adjustment).

Test chart No.11



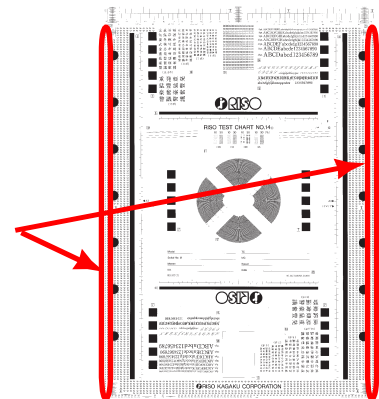
1351

2. AF Horizontal-Scan Position Adjustment

Checks and procedure

- (1) Place A3 size printing paper on the paper feed tray. Make 1 to 1 size master using **test chart No.14** on the AF unit.
- (2) Examine the master created on the print drum, and confirm that the [e] images on the left and right of the original is not missing on the created master.
- (3) If not all the [e] images are made on the master, make adjustment using test mode No.3072 (AF Horizontal Scan Position Adjustment).

Test chart No.14



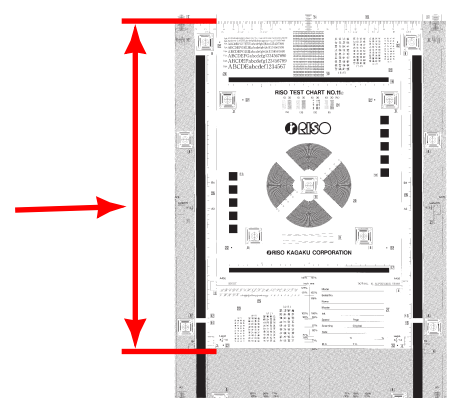
1352

3. AF Read Pulse-Motor Speed Adjustment (Elongation & Shrinkage)

Checks and procedure

- (1) Place A3 size printing paper on the paper feed tray. Make 1 to 1 size master using **test chart No.11** on the AF unit, and make prints.
- (2) Lay the print on top of the original to confirm that the image elongation or shrinkage is within $\pm 1.0\%$ at the 350-mm line of the test chart image.
- (3) If the elongation and shrinkage does not fall within this specification, make an adjustment using test mode No.3074 (AF Scanning Speed Adjustment).

Test chart No.11



1350

Prior to adjustment, adjust the image elongation and shrinkage by first adjusting the write pulse-motor speed (see chapter 15).

4. AF Original Guide Fence Potentiometer Adjustment

Adjustment

- (1) Slide the original guide fence to the innermost (closed) position, and run **test mode No.3045** [*AF-guide min.-width VR value*].
- (2) Then slide the original guide fence to the outermost (opened) position, and run **test mode No.3046** [*AF-guide max.-width VR value*].

5. AF Original IN Sensor Sensitivity Adjustment

Adjustment

- (1) Without an original, execute **Test Mode No. 3044** [*AF Original IN Sensor Sensitivity Adjustment*]. This will automatically adjust the sensitivity of the sensor.

*** This adjustment must be made when the sensor is replaced with a new one.**

CHAPTER 14: MASTER MAKING SECTION

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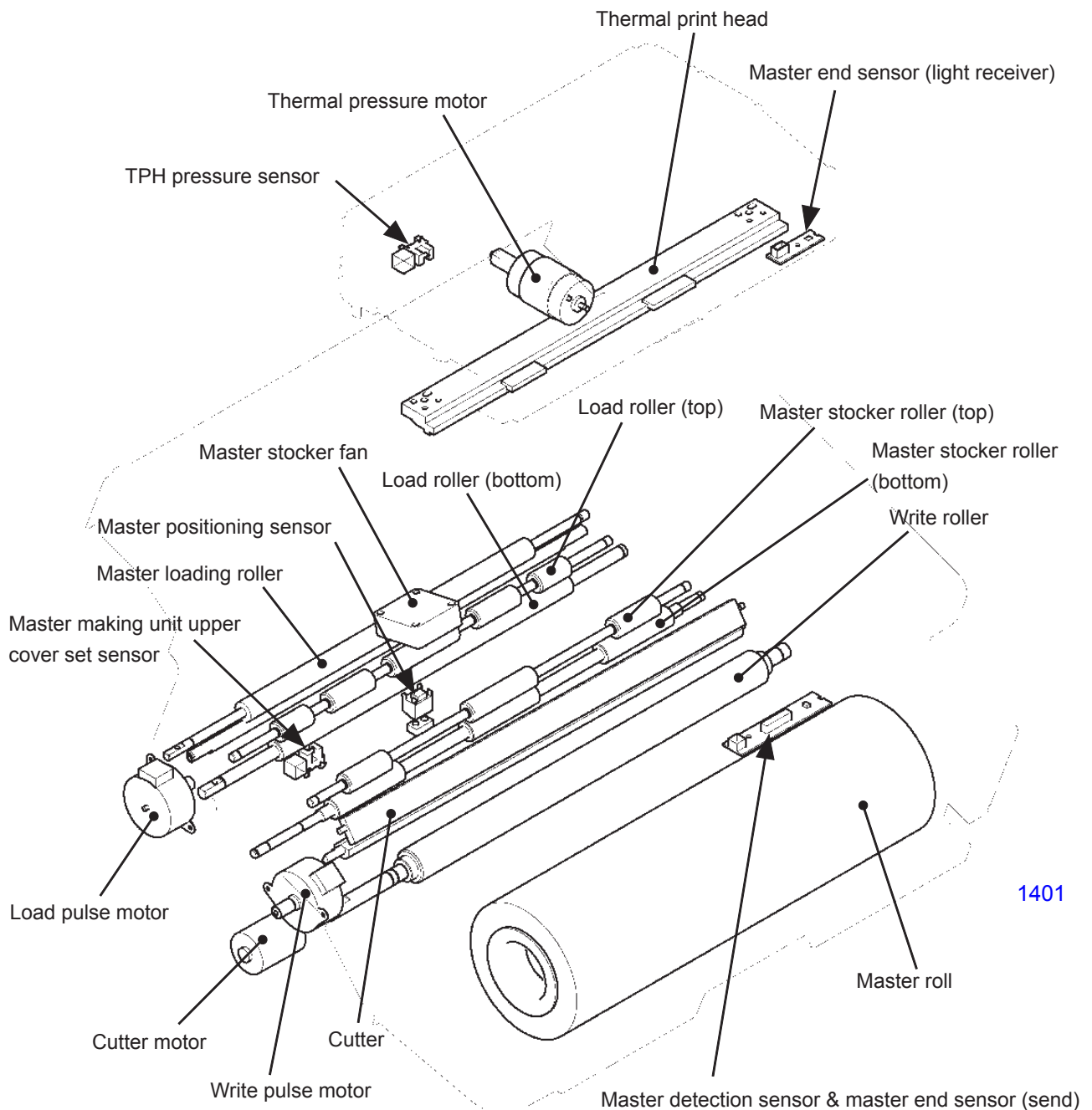
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Mechanism

1. Overview of Master Making Section



1) The master making unit upper cover set detection mechanism

The master making unit upper cover set sensor confirms that the master making unit upper cover is set, and the master setting operation is performed once the upper cover is set.

2) Master end detection

The end of the master roll is confirmed when the master end sensor detects the black end mark attached to the tail end of the mater material on the master roll. The master end sensor checks every 10 ms while the master is being transported, and the indication [C02-200] is displayed when the end mark is detected twice in succession.

3) Master making unit drawer cover set detection mechanism

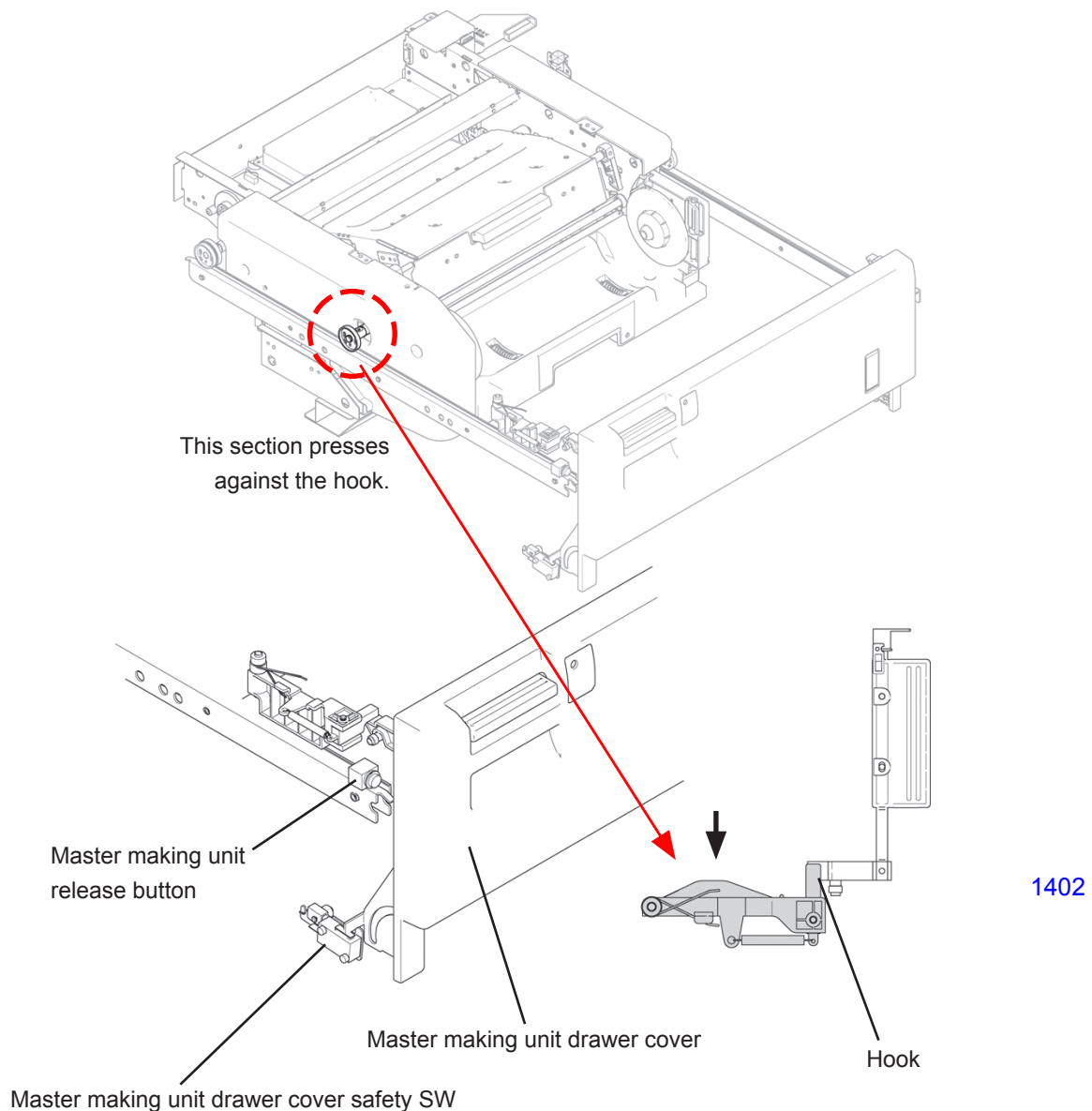
Since the flatbed section cannot be opened or closed, the master making unit is designed to pull out to replace the master roll.

To pull out the master making unit, press the master making unit release button, move the master making unit to the pull-out position, and open the master making unit drawer cover.

If the master making unit is at a position other than the pull-out position, the master making unit drawer cover is locked by a hook. Moving the master making unit to the pull-out position applies pressure to the hook stopper and unlocks the hook.

The master making unit drawer cover safety switch checks whether the master making unit drawer cover is opened or closed.

When the master making unit drawer cover safety switch is OFF, the main motor, first clamp motor, second clamp motor, first master disposal motor, second master disposal motor, first master compression motor, second master compression motor, first horizontal pulse motor, second horizontal pulse motor, cutter motor, and master making unit transport pulse motor cannot be switched ON.



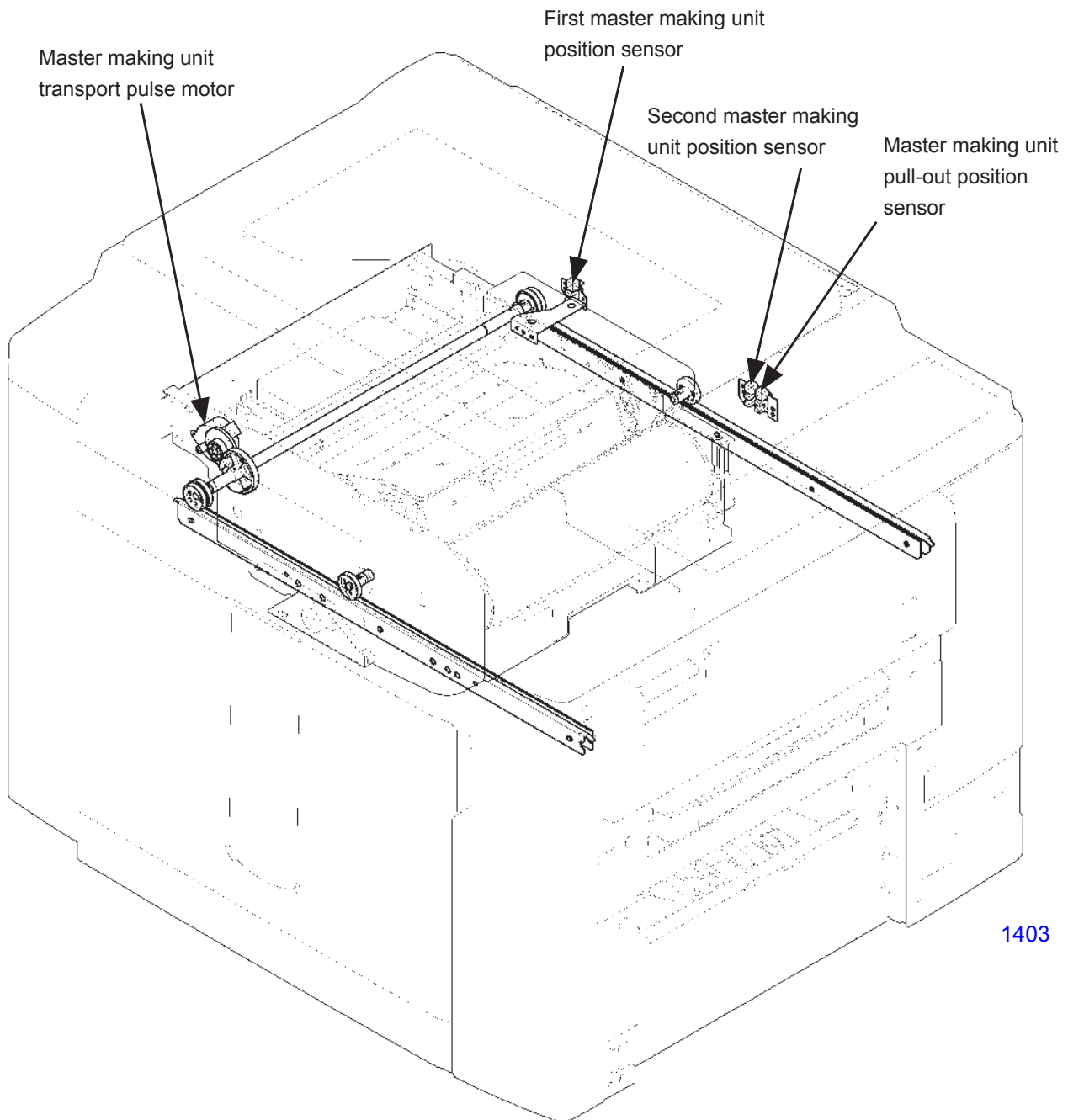
2. Master Making Unit Transport Mechanism

During master-making, the master making unit slides over on top of the print drum for which the master is to be made.

If the master roll needs to be replaced, the master making unit slides to the master making unit pull-out position.

The master making unit transport pulse motor slides the master making unit. The position of the master making unit is confirmed by the first master making unit position sensor, second master making unit position sensor, and master making unit pull-out position sensor.

The master making unit is initially positioned on the first print drum side.



1403

3. TPH (Thermal Print Head) Elevation Mechanism

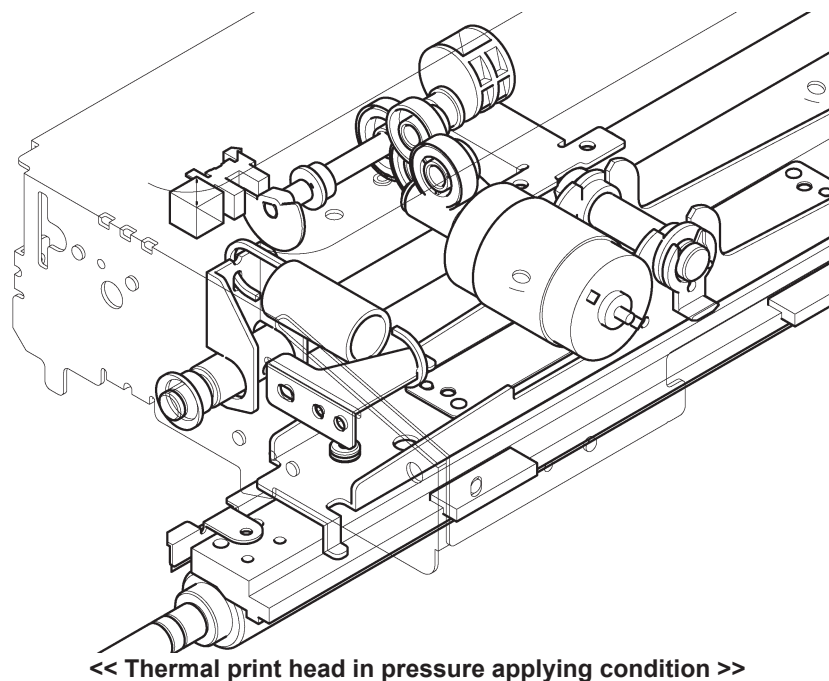
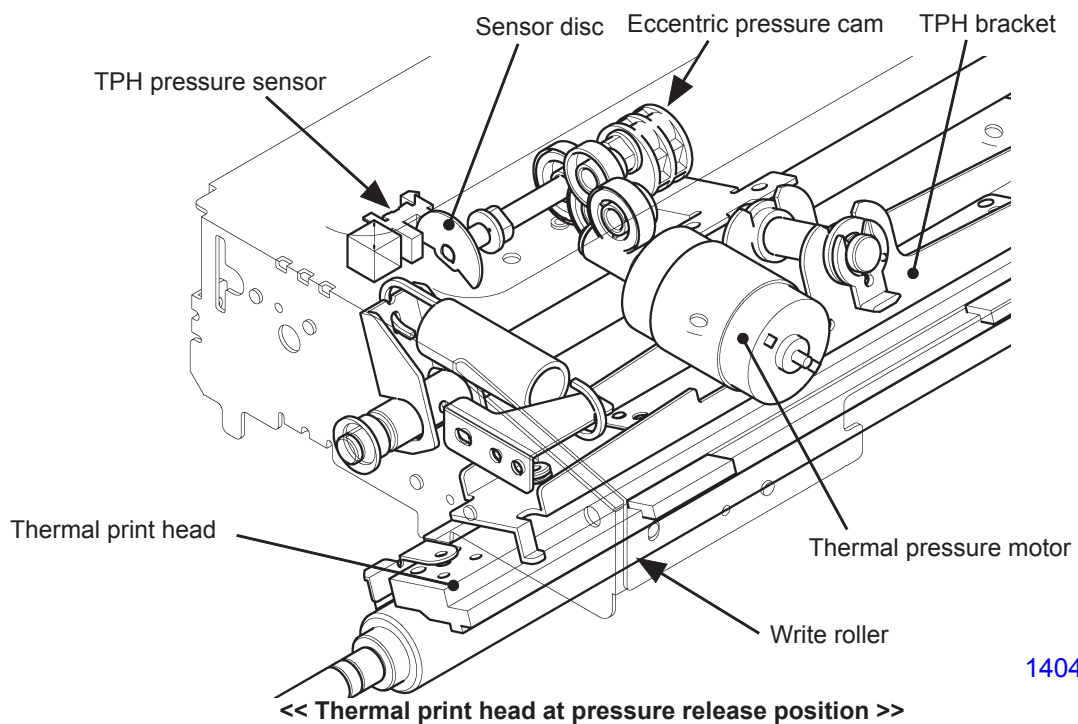
When the machine is on standby or when it is loading the master onto the print drum after master-making, the TPH is raised and moved away from the write roller. During master-making and master transfer operation, the TPH is lowered so that it firmly contacts the write roller.

The TPH is raised or lowered by the rotation of the eccentric pressure cam, which is rotated by the thermal pressure motor.

The eccentric pressure cam moves the TPH bracket up and down as it rotates.

The stop position of the vertical movement of the TPH is detected by the thermal pressure sensor and sensor disc.

When the machine power is switched ON or when the Reset button is pressed, the initialization movement of the machine elevates the TPH away from the write roller.



4. Master Set Mechanism

The master setting operation described below takes place each time when the master making unit upper cover set sensor detects the upper cover closed.

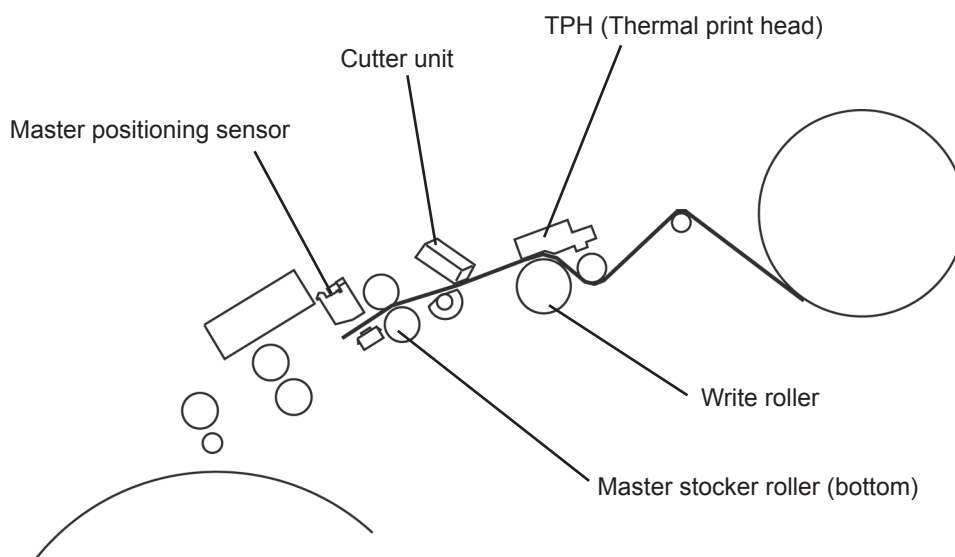
First, the TPH is pushed down against the write roller by a cam, nipping the master material between the TPH and the write roller. The write pulse motor activates to rotate the write roller and the master stocker roller (bottom) to feed the master material forward. When the master positioning sensor detects the leading edge of the master material, the write pulse motor stops. (With the detection of the master material, the master positioning sensor switches ON. Without the detection of the master material, the sensor switches OFF.)

Next, the TPH is elevated up to release the nip on the master material. The write pulse motor then rotates in the feed direction for the amount equivalent to the 20 mm feeding of the master material and then stops. Since the master material is not nipped, it does not advance, but corrects any skew from the previous advance movement.

The master setting operation still continues by pushing the TPH down, nipping the master material against the write roller. The write pulse motor rotates in the reverse direction to pull the master material back. As the master positioning sensor switches from ON to OFF, the motor stops after the leading edge of the master has moved 5 mm away from the master positioning sensor. (This 5mm is adjustable by changing the pulse count of the motor using Test Mode No. 540 .) The TPH is then elevated up away from the write roller to release the nip on the master material to complete the master setting action.

The following action takes place after each master-cutting operation:

After the cutter operates, the TPH is pushed down to nip the master material against the write roller. The write pulse motor rotates in the feed direction to feed the master material. When the master positioning sensor switches ON with the detection of the leading edge of the master, the write pulse motor stops and then rotates in the reverse direction to pull back the master material. The leading edge of the master is pulled back out of the master positioning sensor detection. The write pulse motor stops after the leading edge of the master is pulled back 5 mm from the master positioning sensor. The TPH is then elevated up away from the write roller to release the nip on the master material, completing the master setting action.



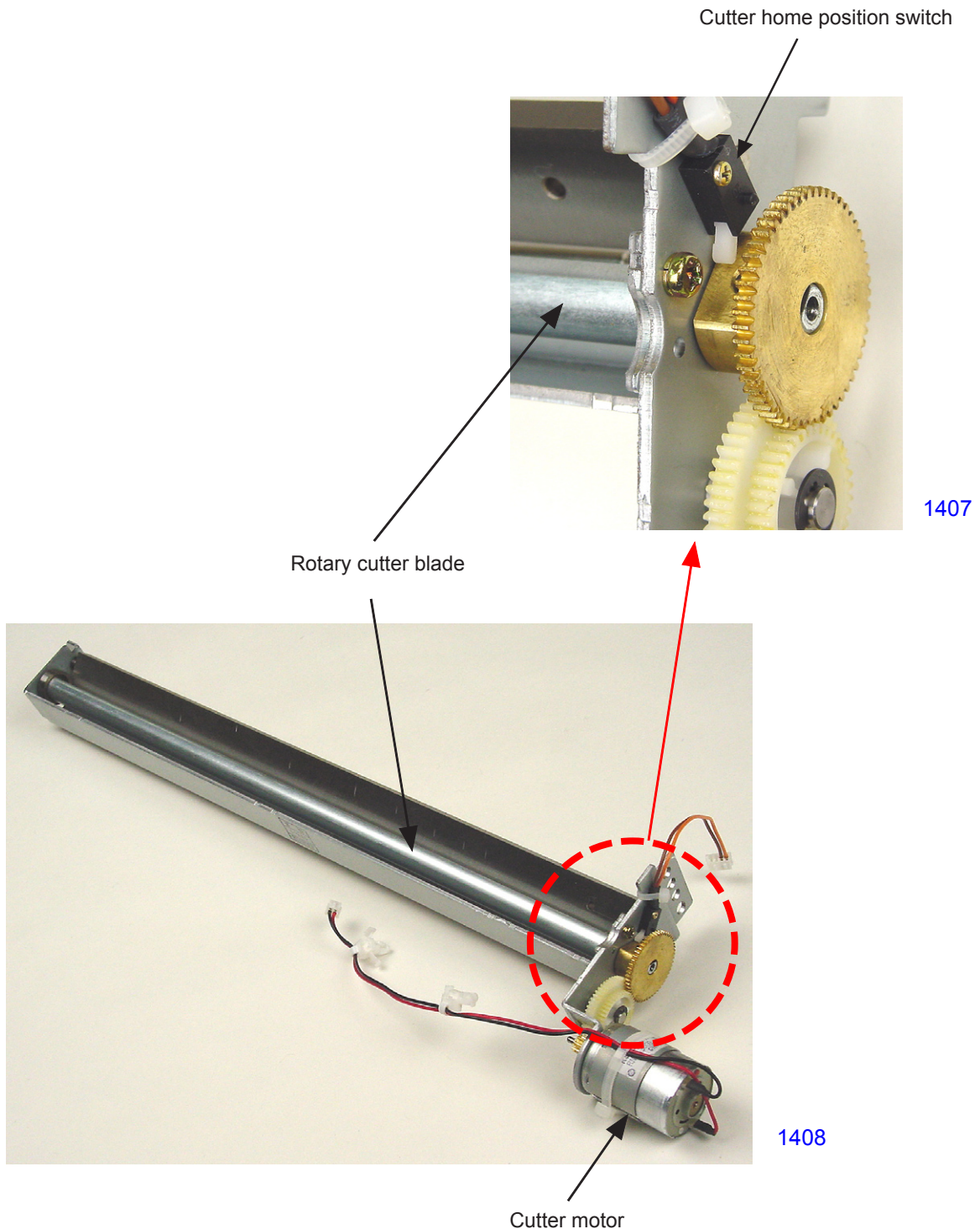
1406

5. Master Cutting Mechanism

The master is cut by a rotary cutter blade on the cutter unit, operated by the cutter motor. The cutter motor rotates the blade only in one direction.

The home position of the rotary cutter blade is detected by the cutter home position switch. The actuator of the switch rides on the cam (shaft of the gear), on which one portion is cut to a flat surface. When the switch actuator comes to the flat cut area, the switch goes OFF and that is the home position of the cutter blade.

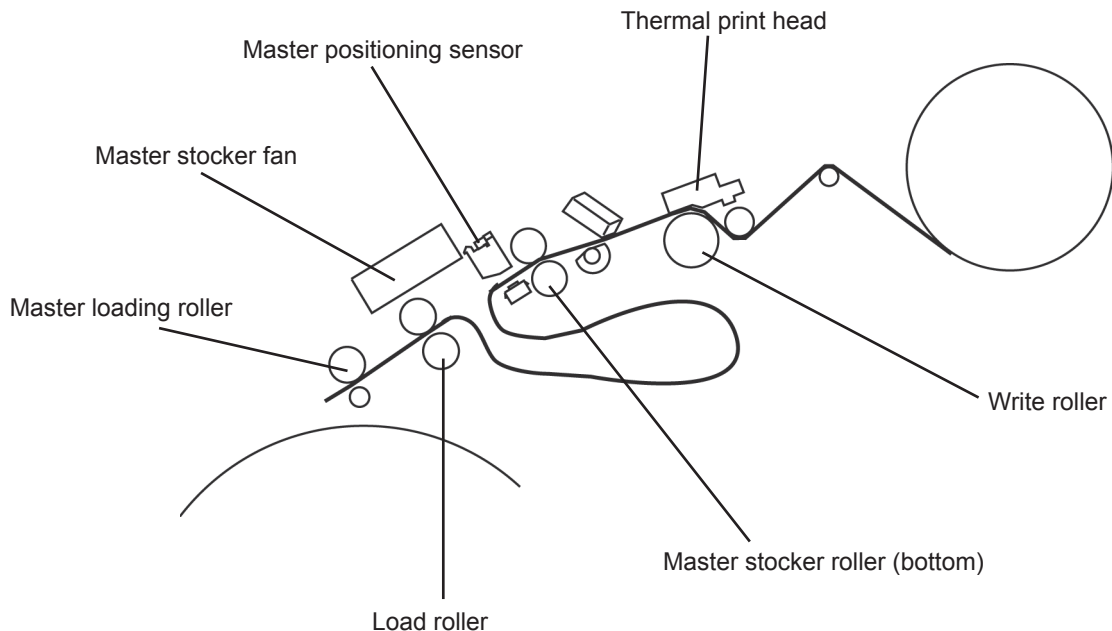
The cutting action starts from the cutter blade at home position and as the gear rotates, the actuator of the cutter home position switch rides on the cam (the thick rounded portion of the gear shaft), activating the switch and after making one rotation, the actuator comes to the flat cut area of the cam and the switch goes OFF. When the cutter home position switch goes OFF, the cutter motor stops to end the cutter blade rotation.



6. Master-making Operation

Described below is the series of operations from the master-making to the master loading onto the print drum.

- (1) At the start of master-making, the TPH is pushed down against the write roller to nip the master material. The write pulse motor rotates the write roller to feed the master towards the master positioning sensor.
- (2) After the detection of the master by the master positioning sensor, the write pulse motor rotates in reverse to pull the master back for the set amount away from the master positioning sensor. The master making unit now waits for the original scanning to take place.
- (3) When the master-making operation is ready to start, the load pulse motor and the write pulse motor rotate to feed the master material to the master loading standby position, and at the same time the TPH starts to make the image on the master.
- (4) During the above movement, just before the master reaches the master loading standby position, the master stocker fan operates. When the master reaches the master loading standby position, the load pulse motor deactivates to stop the load roller rotation. As the TPH starts making the image on the master, the master keeps advancing forward. With the load roller stopped and the master stocker fan blowing the air towards the master stocker area, the master is pooled into the stocker area.
- (5) When the print drum is ready to clamp the master, the load pulse motor rotates to send the leading edge of the master to the clamp plate base. The leading edge of the master is then clamped onto the print drum.
- (6) When the master making (image making on the master) is completed, the TPH is raised to release the nip on the master. The print drum rotates to wrap the master on its surface to complete the master-making and master-loading operation.

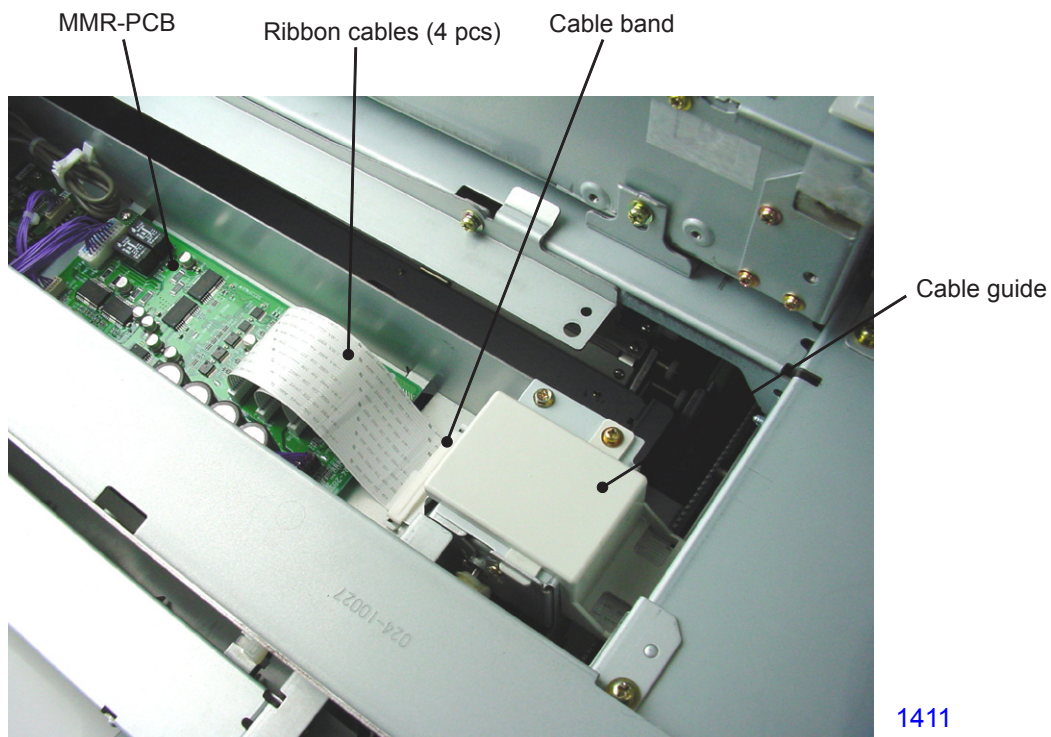
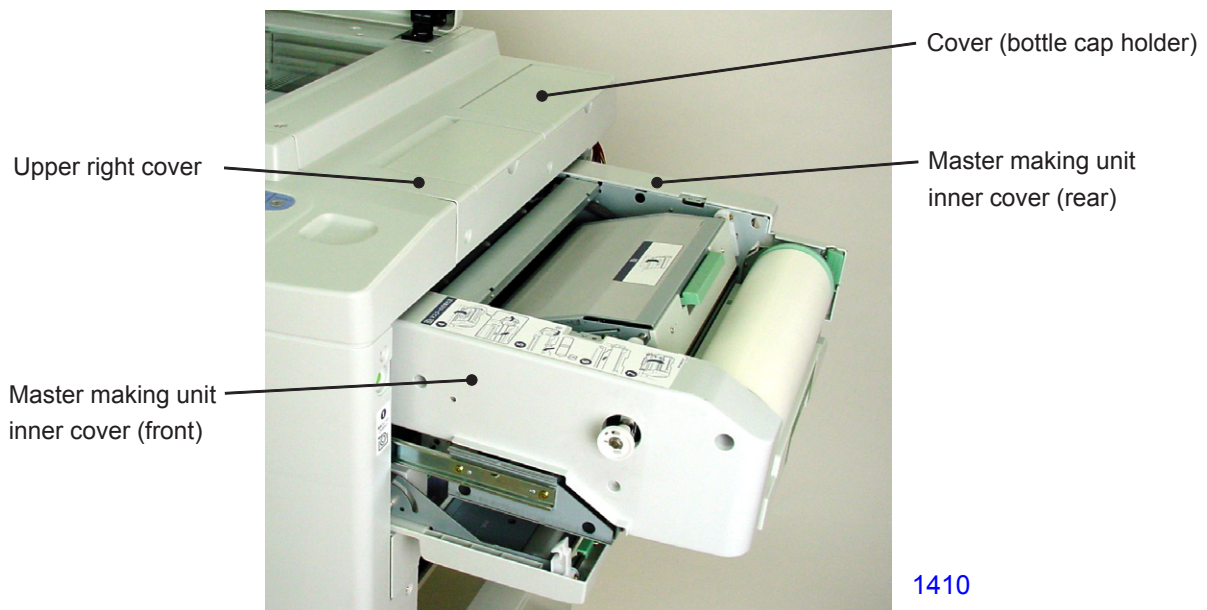


1409

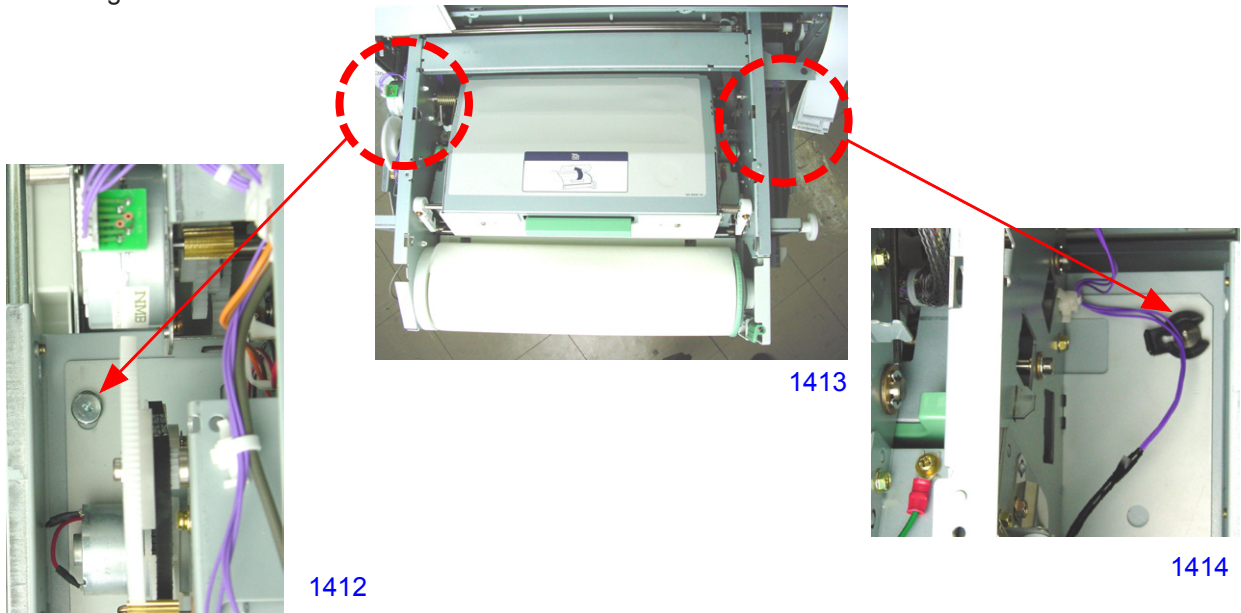
Disassembly

1. Removing the Master Making Unit

- (1) Slide out the master making unit, switch OFF the machine power, and remove following covers.
 - Upper right cover (M4x8 screws; 6 pcs - note that one screw secures the bottle cap holder).
 - Master making unit inner cover (front) - (M3x6 screws; 3 pcs)
 - Master making unit inner cover (rear) - (M3x6 screws; 3 pcs)
- (2) Unplug the four ribbon cable connectors from the MMR-PCB, release the cable band, remove the cable guide (M3x6 screw; 1 pc), and move the ribbon cable out of the way toward the rear.



- (3) Remove one shoulder screw on the front and one snap ring from the rear, and dismount the master making unit from the machine.

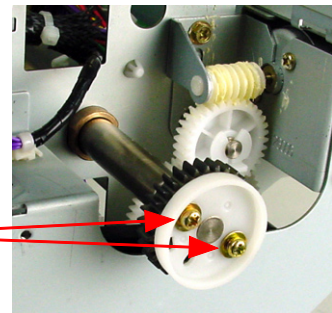


<< Cautions in installation >>

- Do not loosen the screws on either side of the master making unit at the locations indicated in the photo on the right. The mounting positions of these screws are correctly adjusted at the factory using a jig. The master making unit may skew if these screws are loosened.

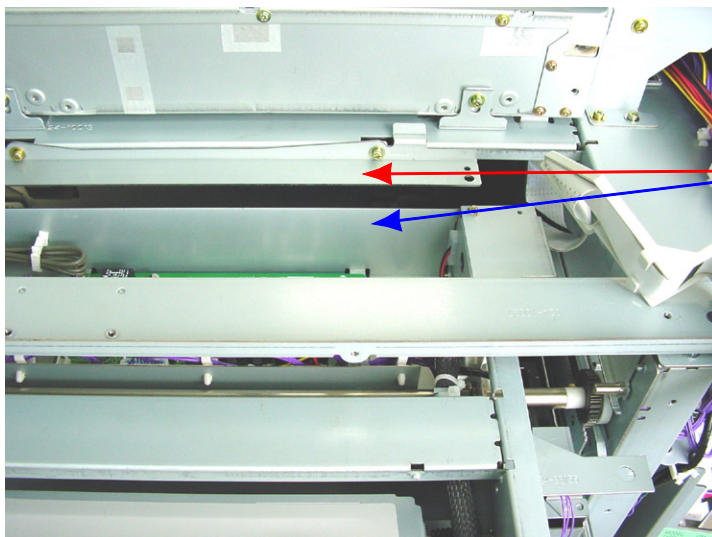
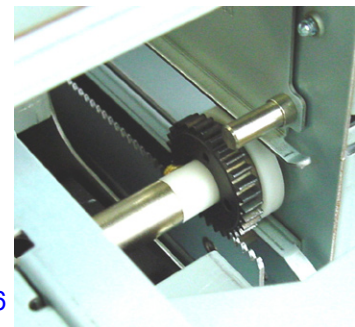
Do not loosen these two screws.

1415



- When mounting the master making unit back on the machine, adjust the engagement of the gears (shown in the photo on the right) on both the front and rear to ensure that the master making unit is not skewed. As shown in the photo below, check and make sure that the metal beam on the machine and the front frame of the master making unit are parallel with each other.

1416



1417

With the master machine unit inserted into the machine, make sure that **the beam on the machine** and **the front frame of the master making unit** are parallel with each other. If the gears are displaced by a single tooth, between the front and the rear, a deviation (skew) of 2 to 3 mm will result.

2. Removing the Master Making Unit Drawer Cover Safety Switch

- (1) Slide out the master making unit and switch OFF the machine power.
- (2) Remove the cover front (right).
- (3) Unplug the connector, and dismount the switch. (M3x14 screws; 2 pcs)



Master making unit drawer cover safety SW

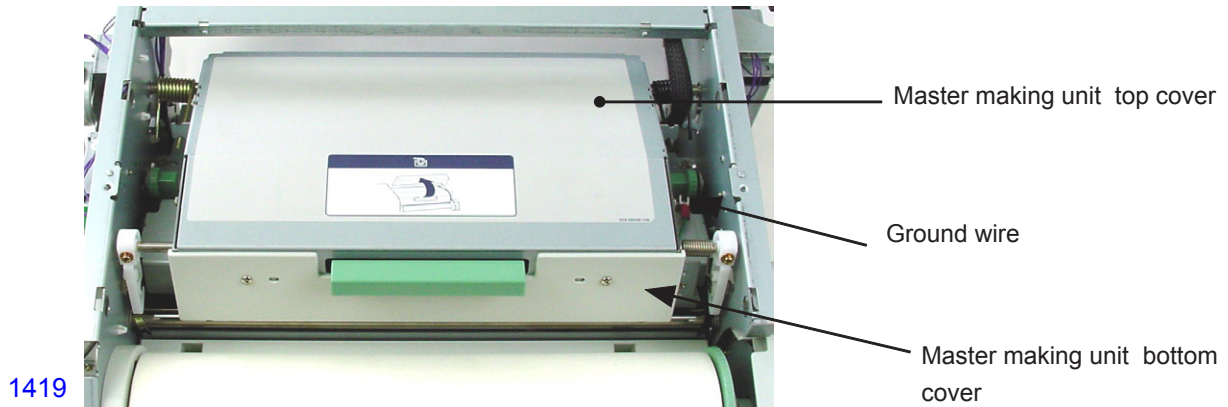
1418

3. Removing the Thermal Print Head (TPH) Assembly

NOTE:

The TPH removal procedure given on this page is for MZ7/MV7 Series machines (300 dpi TPH). The MZ9 Series machines use 600 dpi TPH, and how to remove the TPH is a little different on the MZ9 series machines compared to the MZ7/MV7 Series machines. The TPH is not compatible between the MZ7/MV7 and MZ9 Series.

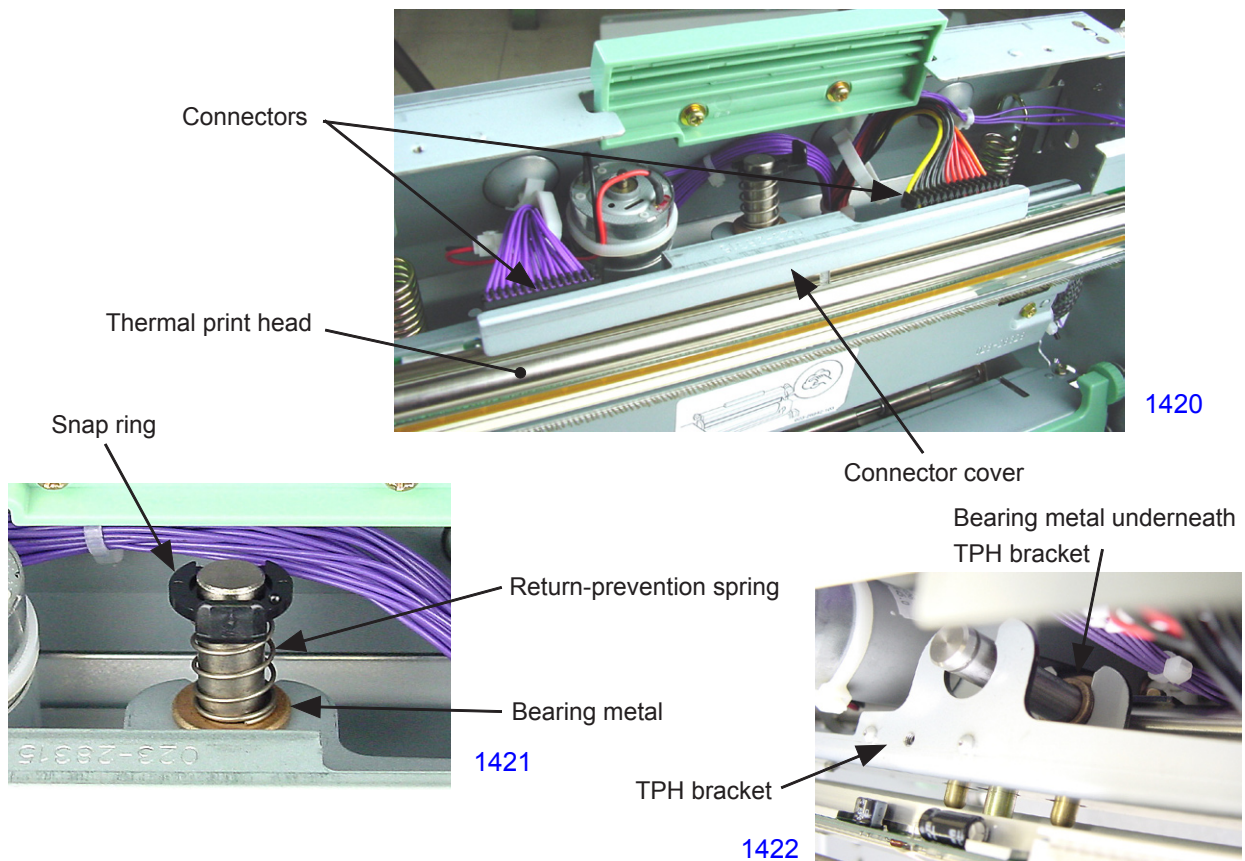
- (1) Slide out the master making unit and switch OFF the machine power.
- (2) Disconnect the ground wire by loosening one screw (M3x6).
- (3) Open the master making unit top cover.
- (4) Detach the master making unit bottom cover. (M3x6 screw; 2 pcs)



- (5) Remove the connector cover (M3x6 screw; 1 pc) and unplug the connectors at two locations.
- (6) Detach the snap ring and remove the return-prevention spring and bearing metal.
- (7) Remove the bearing metal underneath the TPH bracket and dismount the TPH assembly.

<< Precautions in installation >>

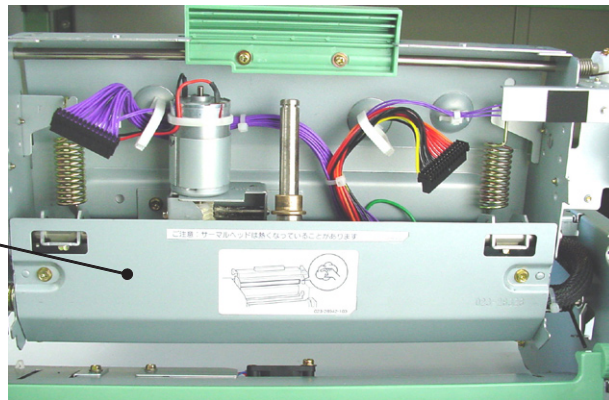
After replacing the thermal print head, adjust the thermal print head heating power value using a test mode.



4. Removing the Thermal Pressure Motor

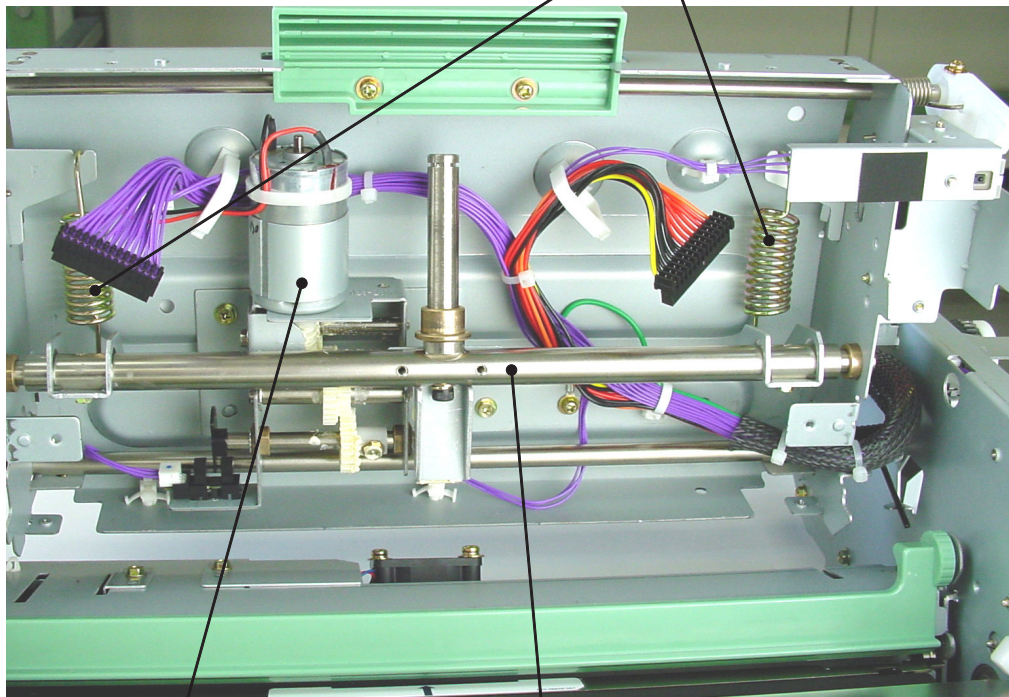
- (1) Slide out the master making unit and switch OFF the machine power.
- (2) Remove the TPH assembly.
- (3) Remove the thermal pressure gear cover. (M3x6 screw; 4 pcs)
- (4) Detach the two thermal pressure springs.
- (5) Detach the E-rings and bearing metal pieces from both ends and remove the TPH fulcrum shaft.
- (6) Unplug the connector of the motor and sensor, remove two screws (M3x6), and remove the thermal pressure motor assembly.

Thermal pressure gear cover



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Thermal pressure springs



1424

Thermal pressure motor

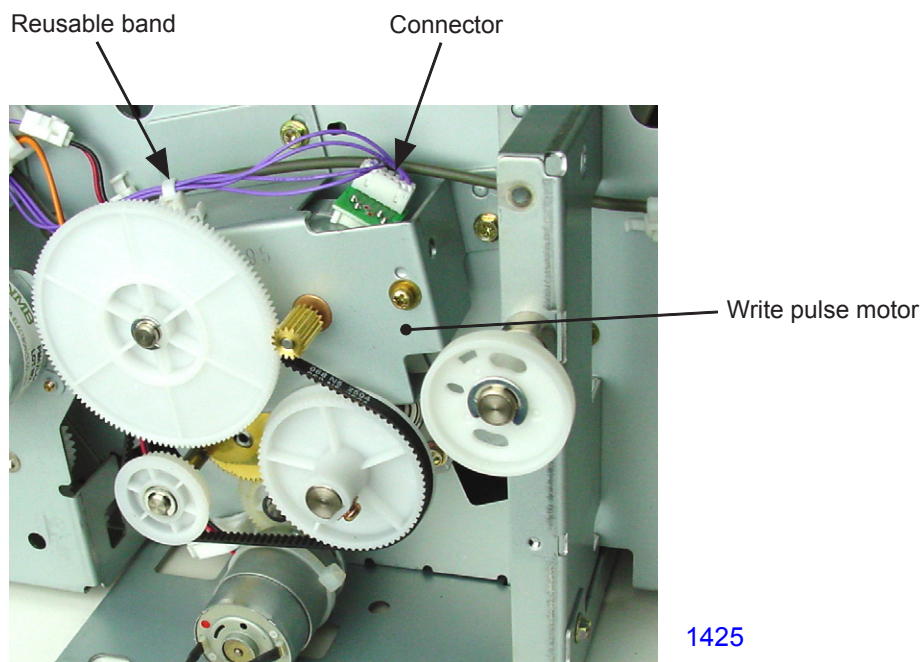
TPH fulcrum shaft

5. Removing the Write Pulse Motor and Write Roller

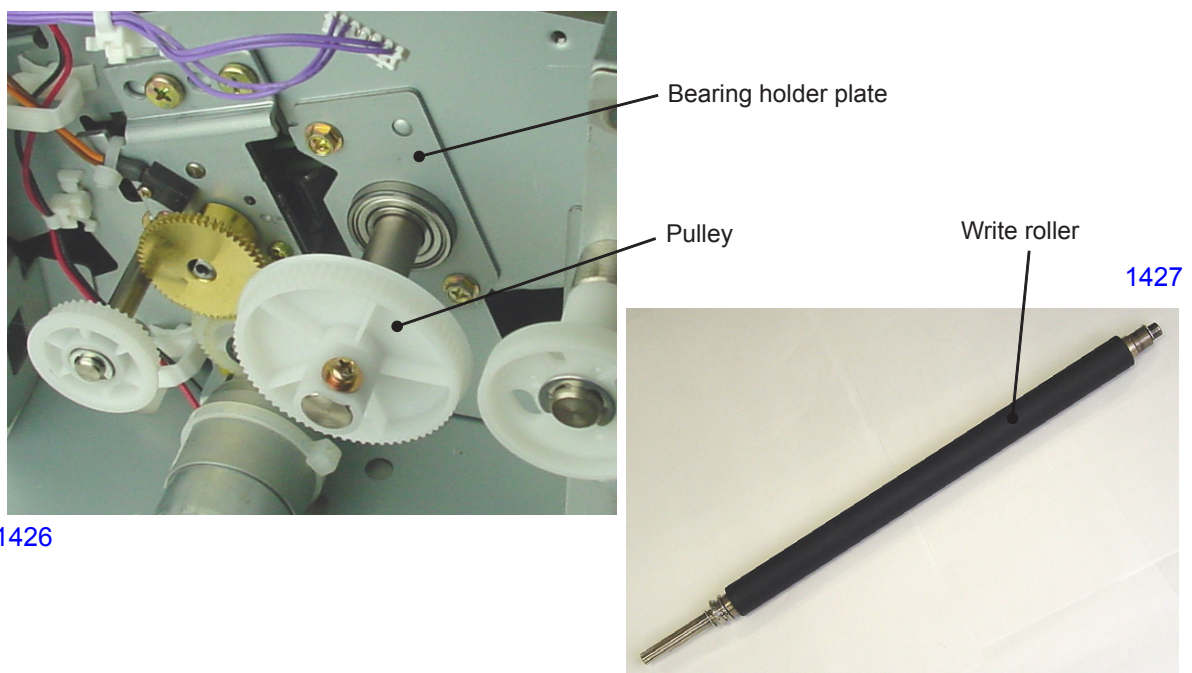
- (1) Slide out the master making unit and switch OFF the machine power.
- (2) Unplug the connector, remove the reusable band and two mounting screws (M3x6), and dismount the write pulse motor assembly.

<< Precautions in installation >>

When installing the write pulse motor assembly, make sure to correctly adjust the belt tension.

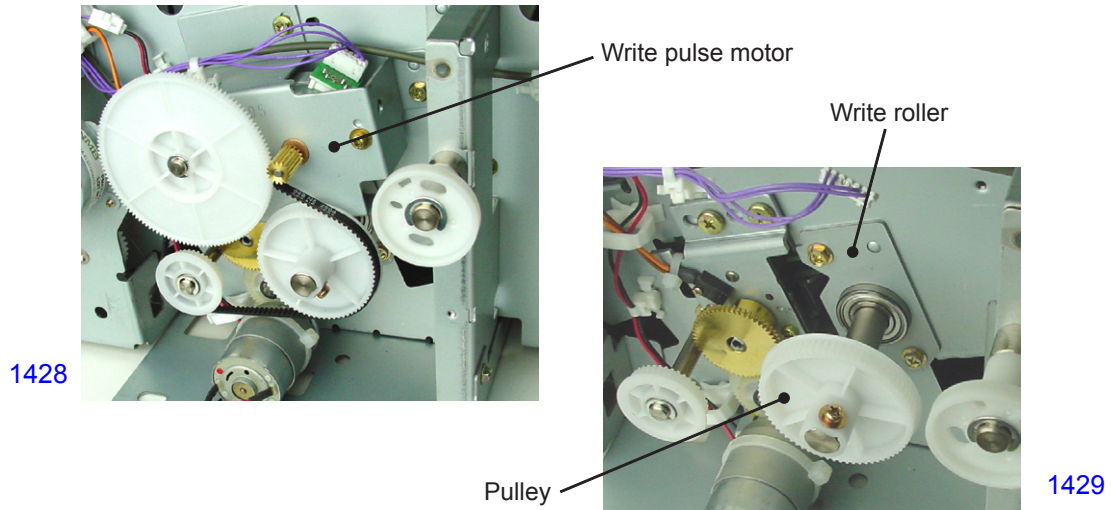


- (3) Remove the pulley from the write roller. (M3x6 screw; 1 pc)
- (4) Remove the bearing holder plate. (M3x6 screws; 2 pcs)
- (5) Pull out the write roller through the opening in the side plate and remove.

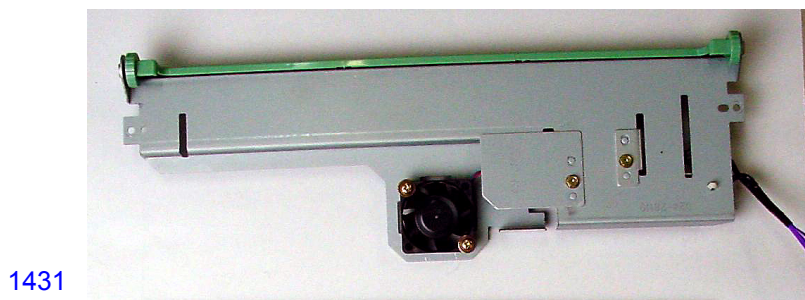
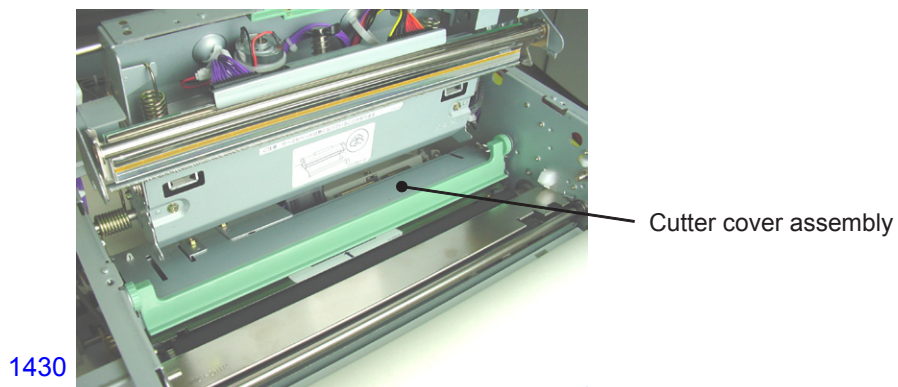


6. Removing the Cutter Unit

- (1) Remove the master making unit from the machine.
- (2) Remove the following parts:
 - Write pulse motor assembly
 - Write roller
 - Pulley



- (3) Unplug the connector from the PCB, free the wire harness, and remove the cutter cover assembly.



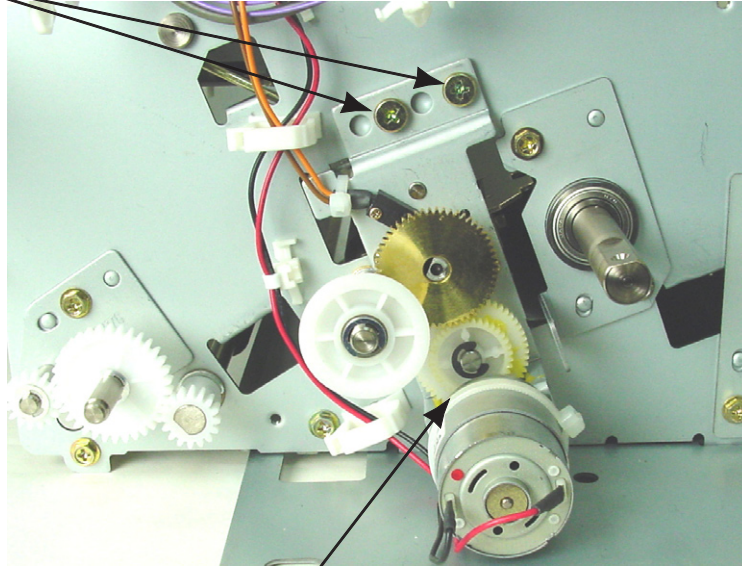
<< Cutter cover assembly >>

- (4) Unplug the connector of the cutter unit, free the wire harness, and remove the two shoulder screws.
- (5) Detach the reusable band and remove the cutter unit.

<< Precautions in installation >>

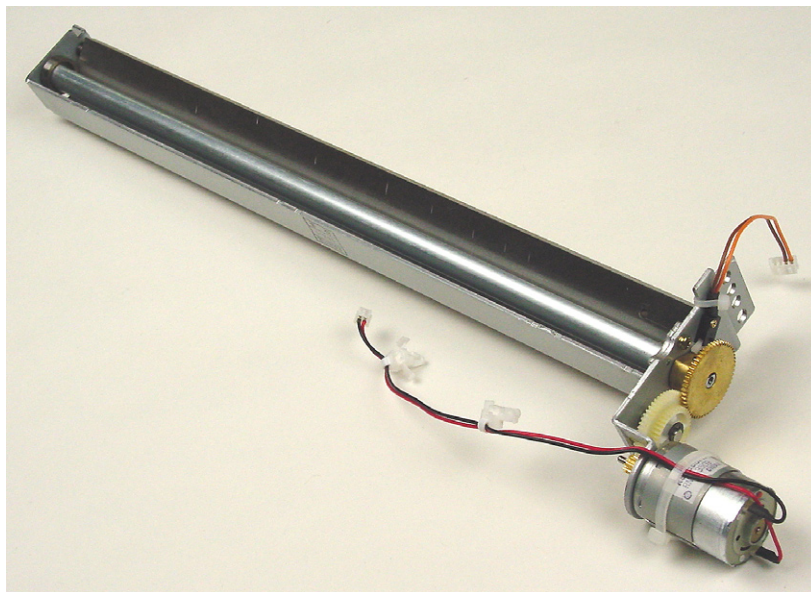
When installing the cutter unit, position the cutter unit towards the holes on the master roll side.

Shoulder screws



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Cutter unit



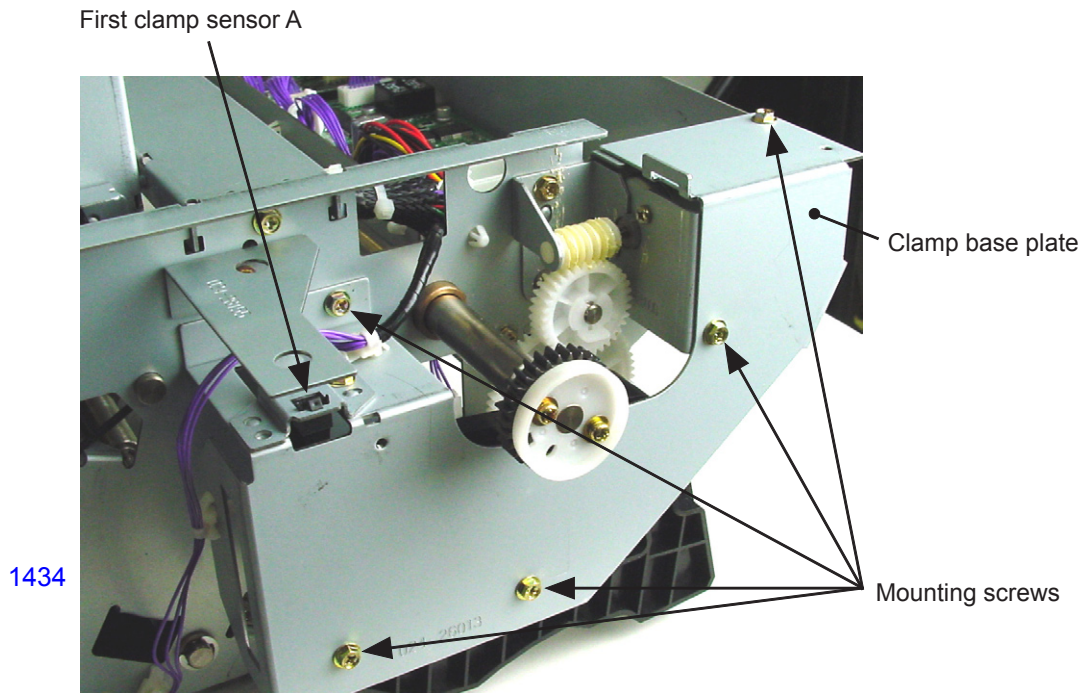
1433

<< Cutter unit >>

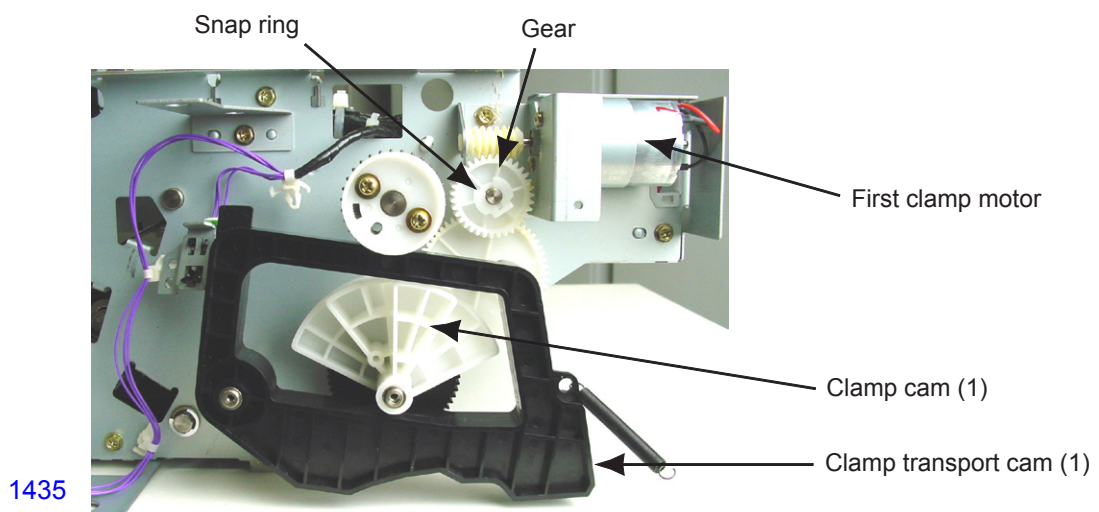
7. Removing the First Clamp Unit

- (1) Remove the master making unit from the machine.
- (2) Remove first clamp sensor A together with the bracket. (M3x6 screw; 1 pc)
- (3) Remove the clamp base plate. (M3x6 screws; 5 pcs)

Note that the spring is hooked to the clamp base plate.



- (4) Pull out the clamp transport cam (1) and the clamp cam (1).
- (5) Remove the snap ring and pull out the pulley.
- (6) Remove the first clamp motor. (M3x6 screw; 1 pc)

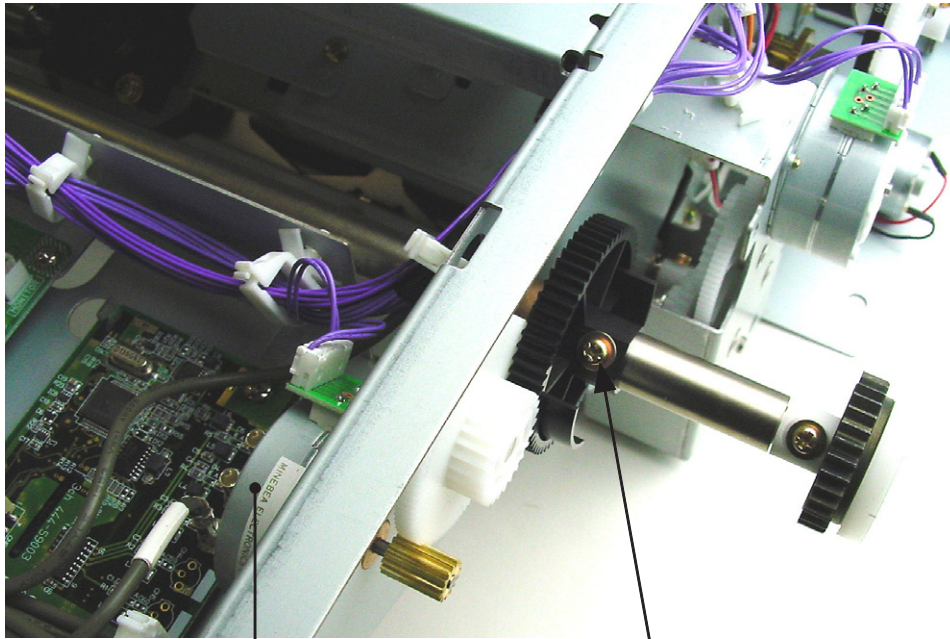


<< Precautions in installation >>

After installing the clamp unit back and attaching the master making unit back on the machine, activate test mode No.883 to make clamp home positioning movement.

8. Removing the Master Making Unit Transport Pulse Motor

- (1) Remove the master making unit from the machine.
- (2) Remove the mounting screw from the black gear and slide the gear towards the end of the shaft to get it out of the way.
- (3) Remove the white gear. (M3x6 screw; 1 pc)
- (4) Unplug the connector and dismount the motor. (M3x6 screw; 2 pcs)



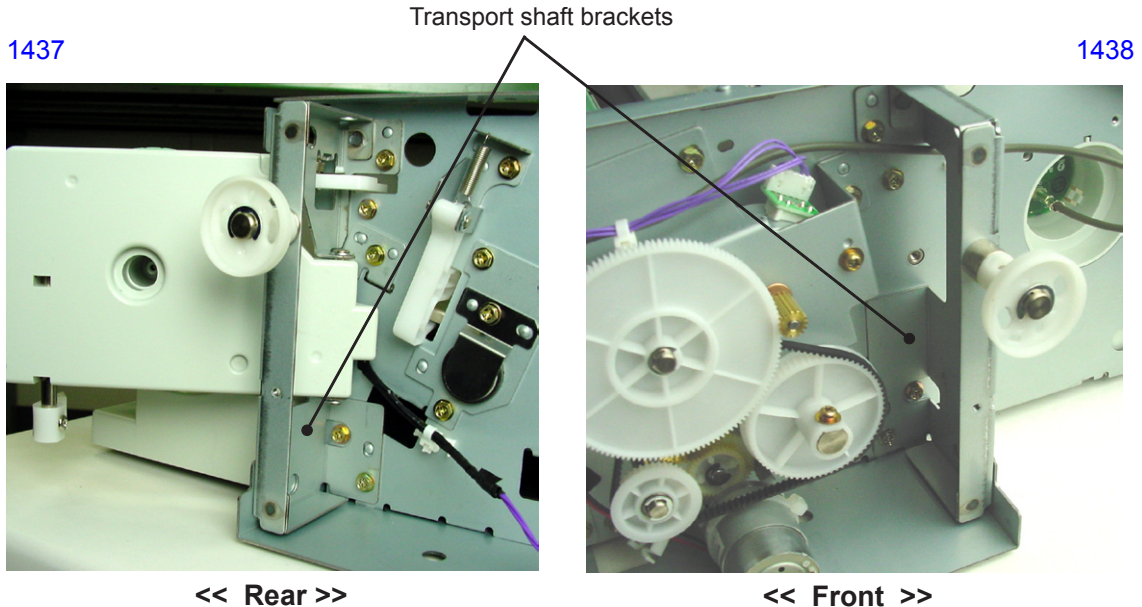
1436

Master making unit transport pulse motor

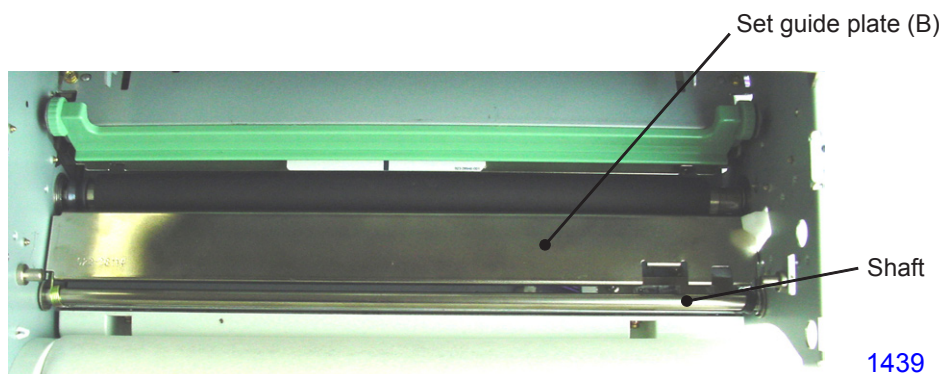
Remove this screw. Move the black gear towards the outside to get it out of the way.

9. Removing the Master Detection Sensor and Master End Sensor (Send)

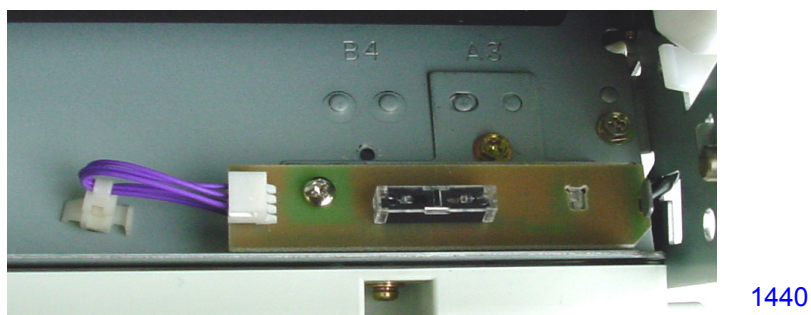
- (1) Remove the master making unit from the machine.
- (2) Open the master making unit upper cover and remove the master roll.
- (3) Remove the transport shaft brackets from the front and rear sides. (M3x6 screws; 3 pcs each)



- (4) Remove the screws on the ends of the shaft of the set guide plate (B). (M3x6 screws; 2 pcs)
- (5) Remove the shaft together with the set guide plate (B).
- * Gently push aside the side frames and pull out the shaft.
- * The front side of the shaft has a D-shaped cut. Check the shaft position when installing.



- (6) Unplug the connector and dismount the sensor. (M3x6 screw; 1 pc)



Adjustment

1. Master Clamp Range Adjustment

Checks and adjustment procedure

- (1) Make a master and mark a short straight line at the center of the master along the edge of the clamp plate so the measurement of the master under the clamp plate can be measured.
 - (2) Open the clamp plate and measure from the leading edge of the master to the marking made. The measured length should be 18 mm plus or minus 1 mm.
 - (3) If the measurement is out of the specified range, make an adjustment using test mode No. 543 (master clamp range adjustment)..
- * Increasing the setting by the test mode increases the master clamp amount. (1 = 0.1 mm)

2. Write Start Position Adjustment

Checks and adjustment procedure

- (1) Run Test Mode No. 80 (Test Print A) to make a master.
 - (2) Remove the master from the clamp plate and measure the distance from the leading edge of the master to the write start position at the center of the master, confirming that the length measured is 63 mm plus or minus 0.5 mm.
 - (3) If the measurement is out of the specified range, run Test Mode No. 541 (Write start-position adjustment) and make an adjustment.
- * Increasing the set value will move up the write start position on the master. (The distance between the leading edge of the master and the write start position becomes shorter.) (1 = 0.1mm)
- * Before this adjustment, make sure that the master clamp range adjustment is made beforehand.

3. Master-making Image Elongation and Shrinkage Adjustment

Checks and adjustment procedure

- (1) Run Test Mode No. 81 (Test Print B) to make a master.
 - (2) Make two prints. Place them on a table in such way that the leading edge of the first sheet is place facing right on table and the second sheet is placed over the first sheet with its leading edge facing the top. Align the first line of each prints from the top. Using the first sheet as a jig, look down on the second sheet to check the image elongation or shrinkage on the second sheet. Confirm that the image elongation or shrinkage on the second sheet is less than plus or minus 1%.
(Example: If the bottom line checked on the second sheet is 400 mm from the top line, image elongation or shrinkage should be less than plus or minus 4 mm.)
 - (3) If the difference is more than 1%, run start Test Mode No. 547 (Master-making speed adjustment) and make adjustment on the first print drum.
 - (4) Then adjust the second print drum to match with the first print drum using the same test mode.
- * Reducing the value vertically shrinks the image. Increasing the value vartically elongates the image.

4. Horizontal Write Position Adjustment

Checks and adjustment procedure

- (1) Run Test Mode No. 386 (Activates or deactivates center black dot setting) and select 1.
 - (2) Without turning the power off, exit Test Mode and make a master without an original on the scanner stage glass.
 - (3) Pull out the print drum, confirming that the black line on the master is within 186 mm plus or minus 1 mm from the inside of the rear flange of the print drum.
 - (4) If the measurement is out of the specified range, run Test Mode No. 1233 (TPH master-making horizontal position adjustment) and make an adjustment.
- * Increasing the value moves the horizontal write position on the master toward the rear of the print drum. If incorrectly adjusted, the printed image on the paper may have missing images on either the right or left of the printed paper.

5. Thermal Power of Thermal Print Head

The thermal power must always be adjusted each time a TPH (thermal print head) is replaced.

- (1) Activate test mode No.9874 to access into the protected area test mode.
- (2) Run Test Mode No. 1234 (TPH resistance input) and enter the resistance value indicated on the sticker affixed to the thermal print head. Press START key to enter the value.
- (3) Press the Reset key to return to normal operation mode

6. Master Making Unit Stop Position Adjustment

Checks and adjustment procedure

- (1) Remove the cover (front upper), the cover (front left), and front right cover.
 - (2) Run Test Mode No. 483 (Master-making Unit Positioning), confirming that the center of the transport shaft is within plus or minus 0.5 mm of the line connecting the stamped mark on the transport shaft retaining plate A and the stamped mark on the machine side frame.
 - (3) If the measurement is out of the specified range, run Test Mode No. 550 (Master-making Unit Position Adjustment) and make an adjustment.
- * If not correctly adjusted, incorrect master clamping amount, wrinkling of the master during the master loading onto the print drum or master loading error may result.
- * Increasing the value by the test mode will shift the master making unit stop position toward the paper receiving side of the machine.

7. Master Cut Length Adjustment

Checks and adjustment procedure

- (1) Make a master and measure the length of the master margin at the tail end of the master on the drum (distance from where the ink ends on the master material to the tail edge of the master). The distance should be 9 mm (plus or minus 1.5mm).
- (2) If the measured distance is out of the specified range, make an adjustment using test mode No.544 (master cut length adjustment).
 - * Increasing the setting by the test mode increases length of the margin at the tail of the master, making the total length of each master longer.

8. Master Making Length Adjustment

Checks and adjustment procedure

- (1) Run the Test mode No. 80 (Test print A) to make a master.
- (2) Peel off the master from the print drum and measure the distance from the leading edge of the top image to the tailing edge of the bottom image created on the master. The distance should be 413mm.
- (3) If the measured length is not 413mm, make an adjustment using test mode No.542 (master making length adjustment).
 - * Increasing the setting by the test mode increases the master making length.

9. Master Positioning Sensor Adjustment

After replacing the master positioning sensor, perform the following adjustment.

Checks and adjustment procedure

- (1) Slide out the master making unit. Rewind the master if a master is set.
- (2) Remove the master making unit cover (front).
- (3) Connect a multimeter to pin 1 (positive) and pin 3 (negative) of the connector (CN11) on the master making unit PCB (MMR-PCB).
- (4) Confirm that the voltage is 1.0 volt plus or minus 0.2 volt.
- (5) If the measured voltage is out of the specified range, rotate both VR1 and VR2 volumes fully clockwise.
- (6) Then rotate the VR1 volume (coarse adjustment) counterclockwise until the voltage is adjusted to approximately 2.0 volts.
- (7) Finally rotate the VR2 volume (fine adjustment) counterclockwise until the voltage is adjusted to within the range of standard value (1.0 volt plus or minus 0.2 volt).

CHAPTER 15: TEST MODE

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1. Operating Method

1) Launching Test Mode

To start Test Mode, switch on power while simultaneously pressing the < ◀ > and < ▶ > keys for first print drum position adjustment on the operation panel. This sets the machine in Test Mode standby status.

2) Operation

A Test Mode No. can be entered (selected) via keys or by selecting from the menu.

a) Using keys

- (1) When the machine is in standby status, enter a desired Test Mode No. using the ten-key pad. To correct input, press the < C > key and press the desired key.
- (2) Press the Start key to start Test Mode operations.
- (3) Press the Stop or Start key to exit Test Mode operations and to set the machine in non-operating or standby status.
- * When parameters are being set, pressing the Start key after changing data registers the input data and sets the machine in standby status. Pressing the Stop key cancels the setting and places the machine in standby.

b) Selecting from the menu

- (1) When the machine is in the standby status, select a unit from the Test Mode menu that includes the test item to be executed.
- * Press with a finger on the name of a desired unit on the LCD screen. (This highlights the selected unit name.)
- * The screen displays the Test Mode sub-menu.
- (2) Select the test item to be executed from the Test Mode sub-menu.
- * Press with a finger on Test Mode operations on the LCD screen. (This highlights the selected test name.)
- (3) Press the Start key to start the Test Mode operations.
- (4) Press the Stop or Start key to exit Test Mode and set the machine in non-operating or standby status.
- * When parameters are being set, pressing the Start key after changing data registers the data and sets the machine in standby status. Pressing the Stop key cancels the setting and places the machine in standby.

3) Ending Test Mode

When the machine is in Test Mode standby status or in Test Mode non-operating status, depress the Reset key for 1 or more seconds to exit Test Mode.

2. Testing Methods

1) Sensor/switch check

The statuses of the sensors and switches are indicated by a buzzer.

- Detecting condition: The buzzer beeps at intervals of 0.1 seconds (quick successive beeps)
- Non-detecting condition: The buzzer beeps at intervals of 0.5 seconds (slightly-prolonged successive beeps)

2) Motor/solenoid check

Pressing the Start key switches the motor/solenoid ON. Pressing the Start or Stop keys halts the motor/solenoid.

- * Note that since error checks are not performed during operations, the moving section may become locked at a limit position if one is set.

3) Unit operation check

- (1) Press the Start key to operate the unit. In general, ordinary error checks will be performed. Some units will stop after completing a series of operations, while others continue operating until a key (Stop key or Start key) is pressed.
- (2) An error will result in a continuous buzzer sound. Press the Reset key to clear the error.

4) Data clear

Press the Start key to start the operation. The screen will display <In Action>. After a brief period during which this indication is displayed, the operation halts automatically, and the screen displays <End>.

5) Data check

Press the Start key to display settings and parameters.

- * Set values are displayed but cannot be changed during data check operation.

(6) Data set

- (1) Pressing the Start key to change the currently displayed settings and parameters.
 - (2) Change the data using the ten-key pad. Use the < * > key to switch between +/- indications.
 - (3) After changing a set value, press the Start key to register the data. The machine will enter standby status. Pressing the Stop key cancels the setting and places the machine in standby.
- * Entering a value outside the permissible range will return the setting to the default value. Entering a value incompatible with the setting unit will return the setting to the default value.

3. System Panel Test Mode

No.	Sensor/switch	Detecting condition	Print drum changeover
0001	Wakeup Key	The key pressed.	—
0002	Solenoid Counter Connection Signal	The solenoid counter is connected.	—
0003	24V A output signal	24V-A ON (there is a 24V output)	—
0004	24V B output signal	24V-B ON (there is a 24V output)	—
0005	Rear Cover Safety SW	Switch ON (main unit rear cover is installed)	—
No.	Motor/solenoid	Remarks	Print drum changeover
0062	Wakeup LED	The LED illuminates.	—
No.	Unit check		Print drum changeover
0080	Test Print A (Checkered)		A
	Creates a master with Test Pattern 1 (Checkered).		
0081	Test Print B (Crossed Lines)		A
	Creates a master with Test Pattern 2 (Crossed Lines).		
0082	Test Print C (Dot 1)		A
	Creates a master with Test Pattern 4 (Dot 1).		
0083	Test Print D (Dot 2)		A
	Creates a master with Test Pattern 5 (Dot 2).		
0084	Test Print E (Dot 1 + Crossed Lines)		A
	Creates a master with Test Pattern 6 (Dot 1 + Crossed Lines).		
0085	Test Print F (Dot 2 + Crossed Lines)		A
	Creates a master with Test Pattern 7 (Dot 2 + Crossed Lines).		
0087	Paper-Feed Test (continuous feeding)		A
	Prints continuously.		
	* The Speed key is enabled.		
	* If the rear cover safety switch is OFF, the operation begins when the rear cover safety switch is turned ON within 10 seconds after the START key is turned ON.		
0088	Low-Speed Printing Operation		A
	Prints continuously at 15 rpm.		
0094	Unit Initialization		—
	Returns mechanical moving units to their home positions. (scanner, thermal print head, compression plate, clamp units, vertical print position, printing pressure)		
0095	System Configuration Data Output		B
	Creates a master for CI system data.		
0097	System Parameter & Error Record Print		B
	Creates a master of the list of data setting changes and error history. * The master is created by the first print drum.		

(Note) Meaning of symbols used in the <Print drum changeover> column in the Test Mode chart.

A : <First print drum side>, <second print drum side>, or <both first and second print drums> can be selected.

B : <First print drum side> or <second print drum side> can be selected.

— : Irrelevant for print drum.

No.	Unit check		Print drum changeover
0101	Machine Clock Activation		—
	Writes the time information set in Test No. 0171 to No. 0173 to the RTC and starts the time count. Pressing the Start key begins the operation and automatically stops it after 0.5 seconds.		
0102	DSP Download (Main, Secondary)		—
	Pressing the Start key begins download of the DSP program for controlling the main motor and second paper feed.		
0103	Machine Test-Mode Data Recording		—
	Stores the maine Test Mode setting into CF card.		
0104	Print Drum Test-Mode Data Recording		B
	Stores the print-drum Test Mode Settings now in the EEPROM of the Print Drum into CF card.		
0105	Machine Test-Mode Data Re-store		—
	Writes the test mode settings retrieved in CF card by test-mode No.0103 into the SH PCB.		
0106	Print Drum Test-Mode Data Re-store		B
	Writes the test mode settings retrieved in CF card by test-mode No.0104 into the Print Drum PCB EEPROM.		
0107	Test Mode Data Back-up		—
	Stores all the test mode numbers and settings, which are changed from the program default, are stored in CF card for record keeping purpose.		
No.	Data clear	Details	Print drum changeover
0110	Clearing Jam Status Data	Normally, when a paper jam occurs, the error can be cleared only by following the jam reset procedure and removing the cause of the jam. However, this setting will force an error caused by jamming to be cleared. Note that errors involving consumables cannot be cleared.	—
0111	Clearing User Memory	Clears data (memory function, programs, properties settings, etc.) in the user area (data returned to default values). * Be sure to record all data before executing this function.	—
0112	Clearing Normal Area Test-Mode Data Memory (Machine)	Returns all settings stored in the main unit FRAM and main unit EEPROM in the Test Mode to their default values. * Does not clear data in protected areas. * Be sure to record all data before executing this function.	—
0113	Maintenance Count Clear (master making)	Resets the maintenance master counter in maintenance call message.	—
0114	Maintenance Count Clear (printing)	Resets the maintenance copy counter in maintenance call message.	—
0115	Maintenance Count Clear (print drum)	Resets the maintenance print-drum print counter in maintenance call message.	B
0116	Setup Wizard Initialize	Initializes the user business type setting, basic screen setting, and mode transition system selection. (There is no need to reset the clock.)	—
0117	Clearing Normal Area Test-Mode Data Memory (Print Drum)	Returns all settings stored in the print drum EEPROM in the Test Mode to their default values. * Does not clear data in protected areas. * Be sure to record all the data before executing this function.	B
No.	Data check	Content of display	Print drum changeover
0120	System Parameter Adjustment Record	Displays a list of Test Mode Nos. and settings for non-default items in the values set. * Items with Nos. from 1200 to 1299 are not displayed.	—
0121	SW Action Record	Displays the error codes (D**) for the switches causing operation shutdown. * Displays the 64 most recent error codes.	—
0122	Error Record	Displays a list of error codes for errors (error type: T, A, B) previously generated in normal mode. * Displays the 64 most recent error codes.	—
0123	Maintenance Count	Displays the values for all maintenance counters.	—
0126	Optional Configuration Check	Displays a list of all connected peripherals or optional equipment.	—

No.	Data check		Content of display	Print drum changeover
0135	Paper size on feed tray is displayed by ID numbers.		Identifies and displays a paper ID determined based on information from the paper width potentiometer and paper size detection sensor. * Paper IDs and paper sizes	—
			00: No paper 01: A3 03: A4 05: B5 07: A5 09: B6 11: Postcard 13: Ledger 15: Letter 17: Statement 18: Statement landscape 19: Foolscap 50: Paper size undefined 1 (paper size detection sensor: ON) 51: Paper size undefined 2 (paper size detection sensor: OFF)	
No.		Data setting		Print drum changeover
0141	Counter Display Control			—
	Description	Selection to display or not display the counter.		
	Setting	Setting range: 0: (Not displayed)-default. 1: (Displayed).		
0142	Test Mode Language			—
	Description	Selects the language for the Test Mode display.		
	Setting	Setting range: 0: (Japanese) 1: (Japanese) 2: (English) 3: (Chinese).		
0143	Maintenance-Master Count Entry			—
	Description	Sets the number of masters at which the maintenance call message is displayed.		
	Setting	Setting range: 0 to 9999 (x 100) sheets Setting unit: 1 (x 100) sheets Default: 0 sheet		
0144	Maintenance-Copy Count Entry			—
	Description	Sets the number of prints at which the maintenance call message is displayed.		
	Setting	Setting range: 0 to 9999 (x 1000) sheets Setting unit: 1 (x 1000) sheets Default: 0 sheet		
0145	Maintenance-Drum Meter Entry			B
	Description	Sets the number of print-drum pressurizing times at which the maintenance call message is displayed (data stored in print drum PCB).		
	Setting	Setting range: 0 to 9999 (x 1000) sheets Setting unit: 1 (x 1000) sheets Default: 0 sheet		
0146	Scan First			—
	Description	Selectes whether scanning is done before master-removal, or do the scanning and master-removal at the same time.		
	Setting	Setting range: 0 (Inactive - both done at the same time) - default 1 (Active - scanning is done before master-making)		
0150	Print Quantity Reset Setting			—
	Description	Sets whether the print count value is reset or not when continuous print is set to OFF.		
	Setting	Setting range: 0 (Reset disabled), 1 (Reset enabled) Default: 0 (Reset disabled)		
0151	Print Speed After Short Interval			—
	Description	Enables/disables the gradual print speed acceleration operation.		
	Setting	Setting range: 0 (Disabled), 1 (Enabled) Default: 0 (Disabled)		
0152	Lighten Print Display Selection [Only on MZ9/MV9 Series]			—
	Description	Enables/disables the Lighten Print display in the Function tab.		
	Setting	Setting range: 0 (Hide), 1 (Display) Default: 0 (Hide)		
0154	Minimum Print Quantity Control			—
	Description	Enables/disables the Minimum Print Quantity setting in the Admin. tab.		
	Setting	Setting range: 0 (Setting change disabled), 1 (Setting change enabled) Default: 0 (Setting change enabled)		

No.	Data setting		Print drum changeover
0155	Counter Action Control		-
	Description	Enables/disables the counters (solenoid counter, software counter). This setting is effective until the power switch is turned OFF. Once the power switch is turned OFF, the setting returns to default (enabled).	
	Setting	Setting range: 0 (Disabled), 1 (Enabled) Default: 1 (Enabled)	
0159	<Warning> Display Control		-
	Description	Enables/disables the display of <wrong size> warning (F02, F10, F43) at the start of master-making or printing.	
	Setting	Setting range: 0 (Warning display disabled), 1 (Warning display enabled) Default: 1 (Warning display enabled)	
0160	Multi-Up Repeat Setting		-
	Description	Sets whether the Multi-Up repeat setting is turned OFF or automatically reset at the end of Multi-Up printing job.	
	Setting	Setting range: 0 (Off), 1 (Reset) Default: 0 (Off)	
0161	Program Printing (1 original) repeat setting.		-
	Description	Enables/disables the reset of the Program Printing when the Auto Printing setting is turned OFF.	
	Setting	Setting range: 0 (Reset disabled), 1 (Reset enabled) Default: 0 (Reset disabled)	
0162	Master-Making stand-by time adjustment		-
	Description	Sets the stand-by time of the master-making in which the initial movement does not take place.	
	Setting	Setting range: 0 (No stand-by), 1 to 180 (1 second to 180 seconds) Default: 180 (180 seconds)	
0165	RLP Mode Switch Timing Control		-
	Description	Adjusts screen switching time in RLP automatic allocation.	
	Setting	Setting range: -5 to +5 (0 to 2.5 sec) Setting unit: 1 (0.25 sec) Default: 0 (1.25 sec)	
0166	Max. Print Quantity Control		-
	Description	Enables/disables the maximum print quantity setting; sets maximum print quantity.	
	Setting	Setting range: 0 to 9999 (0 to 9999 sheets) Setting unit: 1 (1 sheet) Default: 0 (0 sheet) Maximum quantity restriction not set	
0167	Paper ID Auto-Repeat Control		-
	Description	Selects whether the paper size setting reverts to the default setting or the previous setting is maintained when the power is turned ON or the all-reset operation is initiated.	
	Setting	Setting range: 0 (Paper size setting is maintained.) 1 (Paper size setting reverts to default value.) Default: 0 (Paper size setting is maintained.)	
0168	Fine Adjustment Button Display Control		-
	Description	Used to display or hide the fine adjustment button.	
	Setting	Setting range: 0 (Hidden) 1 (Display) Default: 0 (Hidden)	
0169	<Properties> Display Control		-
	Description	Display or hide the properties setting tab.	
	Setting	Setting range: 0 (Hidden) 1 (Display) Default: 1 (Display)	
0170	Stock Management		-
	Description	Display or hide the Stock Management display in Admin. Tab.	
	Setting	Setting range: 0 (Hide) 1 (Display) Default: 0 (Hide)	

No.	Data setting		Print drum changeover
0171	Machine Clock Setting (YEAR)		-
	Description	Sets the <year> in the <year/month/date> setting in the RTC. * Test Mode No. 0101 must be activated after values are entered in Test Mode No. 0171 through No. 0173. Executing Test No. 0101 registers the values set in Test Mode No. 0171 through No. 0173 into the RTC.	
	Setting	Setting range: 2000 to 2199 (Year 2000 to 2199) Setting unit: 1 (1 year) Default: 2000 before RTC is set (before Test No. 0101 is executed) RTC measured value at the time of test activation after RTC is set (after Test No. 0101 is executed)	
0172	Machine Clock Setting (MONTH & DATE)		-
	Description	Sets the <month/date> in the <year/month/date> setting in the RTC. * Test Mode No. 0101 must be activated after values are entered in Test Mode No. 0171 through No. 0173. Executing Test No. 0101 registers the values set in Test Mode No. 0171 through No. 0173 into the RTC.	
	Setting	Setting range: Two upper digits: 01 to 12 (January to December), two lower digits: 01 to 31 (1st day to 31st day) Setting unit: 1 Default: 0101 before RTC is set (before Test No. 0101 is executed) RTC measured value at the time of test activation after RTC is set (after Test No. 0101 is executed)	
0173	Machine Clock Setting (HOUR & MINUTE)		-
	Description	Sets <hour/minute> in the RTC. * Test Mode No. 0101 must be activated after values are entered in Test Mode No. 0171 through No. 0173. Executing Test No. 0101 registers the values set in Test Mode No. 0171 through No. 0173 into the RTC.	
	Setting	Setting range: Two upper digits: 00 to 23 (0 to 23 o'clock), two lower digits: 00 to 59 (00 to 59 minutes) Setting unit: 1 Default: 0000 before RTC is set (before Test No. 0101 is executed) RTC measured value at the time of test activation after RTC is set (after Test No. 0101 is executed)	
0174	Chinese Paper No.16 (Width data setting)		-
	Description	Sets paper width data.	
	Setting	Setting range: 191 to 199 (191mm to 199mm) Setting unit: 1 = 1mm Default: 195 (195mm)	
0175	Chinese Paper No.8 (Width data setting)		-
	Description	Sets paper width data.	
	Setting	Setting range: 266 to 276 (266mm to 276mm) Setting unit: 1 = 1mm Default: 271 (271mm)	
0176	Chinese Paper No.18 (Length data setting)		-
	Description	Sets paper length data.	
	Setting	Setting range: 385 to 395 (385mm to 395mm) Setting unit: 1 = 1mm Default: 390 (390mm)	
0178	DCC Selection (NET-D;GII)		-
	Description	Selection between normal copy counter or digital copy counter display. (NET-D;GII)	
	Setting	Setting range: 0 (Counter display) - default. 1 (Digital copy counter display). 2 (No display). Default: 0 (Counter diaplsy)	
0180	Proof Print Quantity Selection		-
	Description	Selects proof print quantity in two color printing	
	Setting	Setting range: 0 (1st proof print for No.1 drum & 2nd proof print for No.1 and No.2 overlapped). 1 (1st for No.1 drum, 2nd for No.2 drum & 3rd for No.1 and No.2 overlapped). Default: 0 (1st proof print for No.1 drum & 2nd proof print for No.1 and No.2 overlapped).	
0181	Service Info. File Mail Control		-
	Description	Enable or disables the service information mail sending	
	Setting	Setting range: 0 (Disable) 1 (Enable) Default: 0 (Disable) 0 (1st proof print for No.1 drum & 2nd proof print for No.1 and No.2 overlapped).	
0182	Supply Stock Mail Transfer (NET-D;GII)		-
	Description	Enable or disable the supply stock information by e-mail (NET-D;GII)	
	Setting	Setting range: 0 (Disable) 1 (Enable) Default: 1 (Enable)	
0199	Software Option Enable Control (Soft Digitizer)		-
	Description	The software option is enabled when the key code (8 digits) is entered and the Start key is pressed. [For Japanese Machines Only]	
	Setting	Setting range: 00000000 to 99999999 Setting unit: 1 Default: 00000000	

4. Imaging/Scanning Test Mode

No.	Sensor/switch	Detecting condition	Print drum changeover
0200	Carriage HP sensor	The scanner is at the home position.	—
0201	Flatbed Original Det. Sensor	Light received (original present)	—
0202	Flat Bed Original Size Detection Sensor 1	Light received (original present)	—
0203	Flat Bed Original Size Detection Sensor 2	Light received (original present)	—
0204	Flat Bed Original Size Detection Sensor 3	Light received (original present)	—
0205	Flat Bed Original Size Detection Sensor 4	Light received (original present)	—
0206	Flat Bed Original Size Detection Sensor 5	Light received (original present)	—
0207	Flat Bed Original Size Detection Sensor 6	Light received (original present)	—
0208	Flat Bed Original Size Detection Sensor 7	Light received (original present)	—
0209	Compression plate open/shut sensor	The original stage cover is closed.	—
No.	Motor/solenoid	Remarks	Print drum changeover
0260	Scanner lamp	Switches scanner lamp ON/OFF.	—
No.	Unit check		Print drum changeover
0281	Carriage Home Action Returns the scanner to the home position.		—
0284	Scanner Cycle Continuous Action Repeats the scanner operation (A3 scanning, ABC enabled).		—
0287	Scanner Lamp Replace Positioning Moves the scanner to the lamp replacement position.		—
0289	Scanner <Shipping> Positioning Moves the scanner to the machine transport position.		—
No.	Data setting		Print drum changeover
0340	Line-Copy Slice Level Adjustment		—
	Description	Adjusts the slice level for text mode (scanning density 3).	
	Setting	Setting range: -16 to +16 Setting unit: 1 Default: 0 * (<+> for reduced density)	
0341	Auto Base Control (ABC) Slice Level Adjustment		—
	Description	Adjusts the slice level for text mode (auto scanning density).	
	Setting	Setting range: -16 to +16 Setting unit: 1 Default: 0 * (<+> for reduced density)	
0344	Duo Mode Priority Setting [Only on MZ9/MV9]		—
	Description	Places priority on photo mode image processing	
	Setting	Setting range: 0 (standard Duo mode) 1 (Photo mode priority) Default: 0 (standard Duo mode)	
0345	Photo/Duo Default Setting		—
	Description	Image processing selection when Photo or Duo is selected in master-making. Applies to both the master-making and printing to linked printer.	
	Setting	Setting range: 0 (Error-diffusion) 1 (Dot-screen 1) 2 (Dot-screen 2) 3 (Dot-screen 3) 4 (Dot-screen 4). Default: 0 (Error-diffusion)	
0350	Halftone Curve Selection (Photo)		—
	Description	Selects the matrix used as the basis for selecting halftone curves for photo mode.	
	Setting	Setting range: 0 to 8 Setting unit: 1 Default: 4	
0351	Halftone Curve Selection (Dot Photo)		—
	Description	Selects the matrix used as the basis for selecting halftone curves in photo & dot mode.	
	Setting	Setting range: 0 to 8 Setting unit: 1 Default: 4	
0352	Halftone Curve Selection (Duo)		—
	Description	Selects the matrix used as the basis for selecting halftone curves in text/photo mode.	
	Setting	Setting range: 0 to 8 Setting unit: 1 Default: 4	
0353	Halftone Curve Selection (Dot Duo)		—
	Description	Selects the matrix used as the basis for selecting halftone curves in text/photo & dot mode.	
	Setting	Setting range: 0 to 8 Setting unit: 1 Default: 4	

No.	Data setting		Print drum changeover
0359	Trimming Slice Level Adjustment		—
	Description	Sets the slice level for the trimming.	
	Setting	Setting range: -16 to +16 Setting unit: 1 Default: -2 * (<+> for reduced density)	
0362	Inside-border Paint Range Setting		—
	Description	Sets the number of dots on the inside of the area designating border which are included in the area specifying border for deletion from the master data in specified area separation. * Actual change takes place in the unit of <setting value x 8 dots>. Increasing this value increases the border area to be deleted.	
	Setting	Setting range: 0 (0 dot on the inside of border) 1 (1 dot on the inside of border) 2 (2 dots on the inside of border) 3 (3 dots on the inside of border) Default: 1 (1 dot on the inside of border)	
0363	Outside-border Paint Range Setting		—
	Description	Sets the number of dots on the outside of the area designating border which are included in the area specifying border for deletion from the master data in specified area separation. * Actual change takes place in the unit of <setting value x 8 dots>. Increasing this value increases the border area to be deleted. Sets the number of dots on the outside of the area designating border which are used as a separation border (range) in traced color separation. * Actual change takes place in the unit of <setting value x 8 dots>. Increasing this value broadens the border range (area to be separated).	
	Setting	Setting range: 0 (0 dot on the outside of border) 1 (1 dot on the outside of border) 2 (2 dots on the outside of border) 3 (3 dots on the outside of border) Default: 1 (1 dot on the outside of border)	
0380	FB Horizontal Scan Position Adjust		—
	Description	Adjusts the original horizontal scan position on the flatbed. A separate setting is required for AF.	
	Setting	Setting range: -30 to +30 (-3.0 mm to +3.0 mm) Setting unit: 5 (0.5 mm) Default: 0 mm * (<+> for adjustment left)	
0381	FB Scan Start Position Adjust		—
	Description	Adjusts the original scanning start position (amount of scan skip) on the flatbed.	
	Setting	Setting range: -40 to +40 (-4.0 mm to +4.0 mm) Setting unit: 1 (0.1 mm) Default: 0 mm * (<+> for adjustment up)	
0382	FB Scanning Speed Adjustment		—
	Description	Adjusts the original scanning speed on the flatbed.	
	Setting	Setting range: -50 to +50 (-5.0 % to +5.0 %) Setting unit: 1 (0.1 %) Default: 0 % * (<+> to stretch)	
0386	Activates or deactivates center black dot setting		—
	Description	Adds a thin black line at the center of image data on the scanned image during printing in normal master-making and RLP output. * The thin center black line is added only when using image data scanned by the scanner.	
	Setting	Setting range: 0 (Without thin center black line) 1 (With thin center black line) Default: 0 (Without thin center black line)	
0389	Hand-written Color Separation Pen Extraction Lower-limit Density		—
	Description	Sets the pen extraction lower-limit density used in image processing for hand-written color separation.	
	Setting	Setting range: 0 to 255 Setting unit: 1 Default: 100 (Unspecified)	

No.	Data setting		Print drum changeover
0390	Hand-written Color Separation Pen Extraction Upper-limit Density		—
	Description	Sets the pen extraction upper-limit density used in image processing for hand-written color separation.	
	Setting	Setting range: 0 to 255 Setting unit: 1 Default: 220	
0391	Hand-written Color Separation (Ink) Pen Extraction Lower-limit Density		—
	Description	Sets the pen extraction lower-limit density used in image processing for hand-written color separation (ink).	
	Setting	Setting range: 0 to 255 Setting unit: 1 Default: 90	
0392	Hand-written Color Separation (Ink) Pen Extraction Upper-limit Density		—
	Description	Sets the pen extraction upper-limit density used in image processing for hand-written color separation (ink).	
	Setting	Setting range: 0 to 255 Setting unit: 1 Default: 180	
0393	Red-color Separation Pen Extraction Lower-limit Density		—
	Description	Sets the pen extraction lower-limit density used in image processing for red-color separation.	
	Setting	Setting range: 0 to 255 Setting unit: 1 Default: 100	
0394	Red-color Separation Pen Extraction Upper-limit Density		—
	Description	Sets the pen extraction upper-limit density used in image processing for red-color separation.	
	Setting	Setting range: 0 to 255 Setting unit: 1 Default: 220	
0395	Specified Area Separation Density Extraction Threshold (Lower-limit Value)		—
	Description	Sets the pen extraction lower-limit density used in image processing for specified area separation.	
	Setting	Setting range: 0 to 255 Setting unit: 1 Default: 125	
0396	Specified Area Separation Density Extraction Threshold (Upper-limit Value)		—
	Description	Sets the pen extraction upper-limit density used in image processing for specified area separation.	
	Setting	Setting range: 0 to 255 Setting unit: 1 Default: 220	
0397	Traced Color Separation Density Extraction Threshold (Lower-limit Value)		—
	Description	Sets the pen extraction lower-limit density used in image processing for traced color separation.	
	Setting	Setting range: 0 to 255 Setting unit: 1 Default: 100	
0398	Traced Color Separation Density Extraction Threshold (Upper-limit Value)		—
	Description	Sets the pen extraction upper-limit density used in image processing for traced color separation.	
	Setting	Setting range: 0 to 255 Setting unit: 1 Default: 255	
0399	Edge Emphasis Threshold Offset		—
	Description	Sets the offset for the following Test Mode setting value.	
	Setting	Setting range: -128 to 127 Setting unit: 1 Default: 0	

5. Master-making/Disposal Test Mode

No.	Sensor/switch	Detecting condition	Print drum changeover
0400	Master-positioning sensor	Light received (master detected)	—
0401	Master detection sensor	Light path blocked (master detected)	—
0402	Master end sensor	Light path blocked (master end mark detected)	—
0403	Cutter HP SW	Switch OFF (cutter at home position)	—
0406	TPH pressure sensor	Light path blocked (blocked by shield plate)	—
0407	Master-making-unit set sensor	Light path blocked (master making unit cover closed)	—
0410	Master-making-unit releasing button	Switch ON (button depressed)	—
0411	Master-making Unit Position Sensor	Light path blocked (blocked by shield plate)	B
0412	Master-making Unit Pull-out Position Sensor	Light path blocked (blocked by shield plate)	—
0413	Master-making Unit Drawer Cover Safety Switch	Switch ON (master making unit cover closed) * The rear cover safety SW must be ON during this procedure.	—
0420	Master-disposal Jam Sensor	Light received (master detected)	B
0421	Master-compression HP Sensor	Light path blocked (master compression plate at home position)	B
0423	Master-disposal BOX safety SW	Switch ON (master disposal box set in machine) * For inspections of the first print drum side, the rear cover safety switch and the master-making unit drawer cover safety switch must be ON during this procedure. * For inspections of the second print drum side, the rear cover safety switch, the master-making unit drawer cover safety switch, and the first master disposal box safety switch must be ON during this procedure.	B
0425	Master-compression motor FG sensor	Light path blocked (blocked by shield plate)	B
0426	Master-removal motor FG sensor	Light path blocked (blocked by shield plate)	B
No.	Motor/solenoid	Remarks	Print drum changeover
0460	Thermal-pressure motor (CW)	Rotates clockwise (CW).	—
0461	Thermal-pressure motor (CCW)	Rotates counterclockwise (CCW).	—
0462	Write pulse motor (CW)	Rotates clockwise (master feeding).	—
0463	Write pulse motor (CCW)	Rotates counterclockwise (master returning).	—
0464	Load pulse motor (CW)	Rotates clockwise (master feeding).	—
0465	Load Pulse Motor CCW (Reverse)	Rotates counterclockwise (master returning).	—
0466	Write pulse motor + Load pulse motor (CW)	Rotate both write pulse motor and load pulse motor in master-feed direction.	—
0467	Master-making-unit release button LED	The LED of the master-making unit release button illuminates.	—
0468	Master Stocker Fan		—
0470	Master removal motor (CW)	Rotates to feed master into the master disposal box.	B
No.	Unit check		Print drum changeover
0480	Cutter motor 1 cycle motion	Cuts the master.	—
0481	Thermal pressure motor action (TPH down)	Moves the TPH to the pressure application position.	—
0482	Thermal pressure motor action (TPH up)	Moves the thermal print head to the pressure-releasing position (i.e., moves it out of the way).	—
0483	Master-making Unit Positioning	Moves the master-making unit to the master-making position on the first or second print drum side.	B
0484	Master-making Unit Pull-Out Position	Moves the master-making unit to the pull-out position.	—
0490	Master compression-plate home positioning	Returns the compression plate to the home position.	B

No.	Unit check		Print drum changeover
0491	Master compression-plate protection positioning Moves the master compression-plate to the Protection Mode position, when the Protection Mode is enabled.		B
0493	Master compression-plate continuous movement Repeats the removed master compacting operation. A cycle consisting of compacting cycle action -> 3-second standby is repeated.		B
0494	Cutter motor ON action (cut direction) Rotates the cutter motor in the cutting direction. (maximum time: 10 sec)		—
No.	Data check	Content of display	Print drum changeover
0521	TPH thermistor temperature data	Displays the temperature value converted from the A/D value of the TPH thermistor.	—
0524	TPH power voltage	Displays the voltage (x 100) applied to the thermal print head immediately after power is supplied to the thermal print head.	—
0527	Master usage start date	Displays the master start date (year/month/date) stored in the master tag. * For example, <2003/2/28> is displayed by alternating indications of <2003> and <0228>.	—
No.	Data setting		Print drum changeover
0540	Master Front-End Position Adjust		—
	Description	Adjusts the distance of the slight return movement activated after the master positioning sensor switches OFF to perform the incremental movement required following the master cutting operation during master setting.	
	Setting	Setting range: 0 to 100 (0 mm to 10.0 mm) Setting unit: 1 (0.1 mm) Default: 50 (5.0 mm) * (<+> for return direction)	
0541	Write start-position adjustment		—
	Description	Adjusts the master-making start position. (Adjusts the master stop position immediately before write start operation by modifying the distance of the return movement from the master positioning sensor.)	
	Setting	Setting range: -50 to +50 (-5.0 mm to +5.0 mm) Setting unit: 1 (0.1 mm) Default: 0 (0 mm) * (<+> for adjustment up)	
0542	Master-making length adjustment		—
	Description	Adjusts the master-making area (sub-scanning length).	
	Setting	Setting range: -100 to +100 (-10.0 mm to +10.0 mm) Setting unit: 1 (0.1 mm) Default: 0 (0 mm) * (<+> to increase length)	
0543	Master-clamp-range adjustment		B
	Description	Adjusts the master clamp range during master-loading.	
	Setting	Setting range: -100 to +100 (-10.0 mm to +10.0 mm) Setting unit: 1 (0.1 mm) Default: 0 (0 mm) * (<+> to increase)	
0544	Master cut length adjustment		B
	Description	Adjusts the length of a single master (cutting timing).	
	Setting	Setting range: -100 to +100 (-10.0° to +10.0°) * (1°C = approx. 1.5 mm, <+> for increased master length)	
		Setting unit: 5 (0.5°) Default: 0 (0°)	
0545	TPH Thermal Power Adjustment		—
	Description	Adjusts the TPH power.	
	Setting	Setting range: 0 to 8 * (Smaller the number the higher the TPH power)	
		Default: MZ7/MV7 = 2 MZ9/MV9 = 4	

No.	Data setting			Print drum changeover
0547	Master-making speed adjustment			
	Description	Regulates the speed of the write pulse motor to adjust image stretching/shrinkage during master-making.		B
	Setting	Setting range: -100 to +100 (-10.0% to +10.0%) Setting unit: 1 (0.1%) Default: 0 (0%)	* (<+> to stretch)	
0548	Write Roller Diameter Reference Adjustment			
	Description	Input the diameter of the Write roller to compensate the fluctuation in diameter between the rollers.		-
	Setting	Setting range:2305 (23.05mm) to 2315 (23.15mm) Setting unit: 1 (0.01mm) Default: 2310 (23.10mm)	* (input the diameter in millimeters x 100)	
0550	Master-making Unit Adjustment			
	Description	Adjusts the master-making unit stop position for master-making.		B
	Setting	Setting range: -20 to +20 (-2.0 mm to +2.0 mm) Setting unit: 1 (0.1 mm) Default: 0 (0 mm)		
0551	Master-making Unit Pull-Out Position Adjustment			
	Description	Adjusts the master-making unit stop position for removal.		-
	Setting	Setting range: -20 to +20 (-2.0 mm to +2.0 mm) Setting unit: 1 (0.1 mm) Default: 0 (0 mm)		
0570	M.-Rmv. Roller Stop Timing			
	Description	Sets the timing for vertical transport rollers to stop in relation to print drum angle.		B
	Setting	Setting range: -50 to +50 (-2.0 mm to +2.0 mm) Setting unit: 1 (1 degree) Default: 0 (0 degree)		
0572	Master Removal Box Set-Motion			
	Description	Activates or deactivates the master removal box set-motion when the machine power is turned, when the machine wakes up from sleep mode or when the box is inserted.		-
	Setting	Setting range: 0 (Deactivated) 1 (Activated). Default: 0 (0 mm)		
0573	Master compression-limit position (maximum end position)			
	Description	Sets the pulse count for the compacting limit position.		B
	Setting	Setting range: 122 to 180 (122 to 180 pulses) (Compression plate angle from home position: 75° to 110°) Setting unit: 1 (1 pulse) Default: 163 pulses (Compression plate angle from home position: 100°)		
0575	Master compression duration adjustment			
	Description	Sets the time (time for single cycle of compacting FG) for the detection of compacting. * The compacting operation finishes when the one cycle time of the compacting FG exceeds the set time.		B
	Setting	Setting range: 500 to 5600 (5 msec to 56 msec) Setting unit: 25 (0.25 msec) Default: First print drum side in A3 machine: 4100 (41msec) Second print drum side in A3 machine: 3800 (38msec) First print drum and second print drum sides in B4 machine: 3700 (37msec)		
0576	Master disposal box full detection position adjustment			
	Description	Sets the pulse count for the full box compacting position.		B
	Setting	Setting range: 73 to 163 (73 to 163 pulses) (Compression plate angle from home position: 45° to 100°) Setting unit: 1 (1 pulse) Default: 162 pulses (Compression plate angle from home position: 99°)		
0577	Master Compression PROTECT Position Adjustment			
	Description	Adjusts the position of the Master compression plate when the PROTECT is ON.		B
	Setting	Setting range: -30 to +30 (-30 pulses to +30 pulses) Setting unit: 5 (5 pulses) Default:0		

No.	Data setting		Print drum changeover
0578	Master disposal motor speed selection		B
	Description	Selects the master disposal motor speed table relative to master removal print drum speed.	
	Setting	Setting range: 0 (0.9 times the speed) 1 (1.0 times the speed) 2 (1.1 times the speed) 3 (1.2 times the speed) 4 (1.3 times the speed)	
		Default: MZ7 No.2 Drum & MZ9 No.1 & No.2 Drums = 1 MZ7 No.1 Drum = 2	
0579	Compacting Completion Position Default Adjustment Selection		—
	Description	Enables/disables automatic adjustment to correct the default value of the compacting completion position. * The setting value applies to both first print drum and second print drum sides.	
	Setting	Setting range: 0 (Disable) 1 (Enable)	
		Default: 1 (Enable)	
0580	Second Master Removal Print Drum Stop Angle Adjustment		—
	Description	Sets the angle at which the print drum rotates in reverse and halts after the master is released by the first clamp to permit removal of the master by the second print drum.	
	Setting	Setting range: -15 to +15 (-15° to +15°) Setting unit: 1 (1°) Default: 0 (0°)	
		* Position rotated 16° in reverse from the B-position of the second print drum.	

6. Paper Feed/Eject Test Mode

No.	Sensor/switch	Detecting condition	Print drum changeover
0600	Paper detection sensor	Light received (paper detected)	—
0601	Paper-size detection sensor	Light received (paper detected)	—
0602	Elevator upper-limit sensor A	Light path blocked (blocked by shield plate)	—
0603	Elevator upper-limit sensor B	Light path blocked (blocked by shield plate)	—
0604	Elevator lower-limit sensor	Light path blocked (blocked by shield plate)	—
0605	Paper sensor	Light path blocked (paper detected)	—
0606	Paper-ejection sensor	Light received (paper detected)	—
0607	Paper-feed-tray upper safety SW	Switch ON (button depressed)	—
0608	Paper-feed-tray lower safety SW	Switch ON (button depressed) * The paper feed tray upper safety SW must be ON during this procedure.	—
0609	Paper-feed tray elevation button	Switch ON (button depressed)	—
0610	Remaining Paper Volume Sensor A	Light path blocked (blocked by shield plate)	—
0611	Remaining Paper Volume Sensor B	Light path blocked (blocked by shield plate)	—
0612	Paper-ejection FG sensor	Light path blocked (blocked by shield plate)	—
0614	Paper-feed pressure sensor	Light path blocked (blocked by shield plate)	—
0615	Registration Sensor	Light path blocked (paper detected)	—
0616	Guide Roller Release Home Position Sensor	Light path blocked (blocked by shield plate)	—
0617	Central Transport Sensor	Light path blocked (paper detected)	—
0618	Paper Ejection Wing Home Position Sensor	Light path blocked (blocked by shield plate)	—
0619	Second Paper Feed Motor FG Sensor	Light path blocked (blocked by shield plate)	—
0620	Central Flap Home Position Sensor	Light path blocked (blocked by shield plate)	—
No.	Motor/solenoid	Remarks	Print drum changeover
0660	Paper ejection motor		—
0661	Suction fan		—
0662	Separation fan		—
0663	Second Paper Feed Motor		—
0664	Central Suction Fan		—
0665	First Separation Fan		—
0666	Paper Ejection Wing Pulse Motor (CW)		—
0667	Paper Ejection Wing Pulse Motor (CCW)		—
0668	Feed Tray Button LED	The LED illuminates.	—
No.	Unit check		Print drum changeover
0681	Paper feed tray maximum up positioning Raises the paper feed tray to the paper feed position when the Start key is pressed.		—
0682	Paper feed tray elevation up & down Repeats the paper feed tray raising and lowering operations.		—
0683	Paper feed tray maximum down positioning Lowers the paper feed tray to the lower-limit position when the Start key is pressed.		—
0684	Separation Pump Solenoid ON/OFF Action Turns the solenoid ON when the Start key is pressed. The solenoid automatically switches OFF after 10 seconds.		B
0687	Paper Feed Reverse-rotation Solenoid ON/OFF Action Turns the solenoid ON when the Start key is pressed. The solenoid automatically switches OFF after 10 seconds.		—
0688	Paper-feed clutch ON/OFF action Turns the clutch ON when the Start key is pressed. The clutch automatically switches OFF after 10 seconds.		—

No.	Unit check			Print drum changeover
0702	Guide Roller Release Motor			—
	Repeats nipping and releasing operations when the Start key is pressed.			
0703	Paper Ejection Wing Home Action			—
	Moves the paper ejection wings to the home positions.			
0704	Paper Ejection Wing Target Shift			—
	Moves the wings to the positions set in Test Mode No. 780.			
0705	Automatic Multiple Paper Feed Adjustment			—
	One sheet of thin RISO paper must be set at the multiple paper feed sensor position during this procedure.			
0707	Central Flap Motor (Normal)			—
	Repeats the flat movement between the top and bottom positions when the Start key is pressed.			
0708	Elevator motor ON action			—
	Rotates the elevator motor for raising operation (maximum time: 10 sec).			
0709	Automatic Registration Sensor Adjustment			—
	One sheet of thin RISO paper must be set at the registration sensor position during this procedure.			
No.	Data check	Content of display		Print drum changeover
0721	Paper width potentiometer data	Displays the paper width (mm) to the first decimal place after adjustment.		—
0722	Multiple Paper Feed Sensor	Displays the A/D value of the multiple paper feed sensor (also serves as paper sensor).		—
No.	Data setting			Print drum changeover
0740	Elevator upper-limit position selection			—
	Description	Selects the paper feed tray stop position (paper feed position). In the case of <Auto>, the upper-limit position is linked to the paper feed pressure lever position. The position is fixed in settings <1> through <3>.		
	Setting	Setting range:	0 (Auto. Linked to paper feed pressure lever position) 1 (Normal position) 2 (Card position) 3 (Custom position)	
			Default: 0 (Auto. Linked to paper feed pressure lever position)	
0741	Paper-feed-clutch ON angle			—
	Description	Sets the activation angle for the paper feed clutch.		
	Setting	Setting range: –100 to +100 (–10.0° to +10.0°) Setting unit: 5 (0.5°) Default: 0 (0°)	* (<+> for slower ON timing)	
0742	Paper-feed-clutch OFF angle			—
	Description	Sets the deactivation angle for the paper feed clutch when the paper type is normal.		
	Setting	Setting range: –100 to +100 (–10.0° to +10.0°) Setting unit: 5 (0.5°) Default: 0 (0°)	* (<+> for slower OFF timing)	
0744	Paper Feed Clutch OFF Angle (card)			—
	Description	Sets the deactivation angle for the paper feed clutch when the paper type is <CARD>.		
	Setting	Setting range: –100 to +100 (–10.0° to +10.0°) Setting unit: 5 (0.5°) Default: 0 (0°)	* (<+> for slower OFF timing)	

No.	Data setting		Print drum changeover
0749	FP Paper Feed Clutch ON Angle		—
	Description	Sets the activation angle for the paper feed clutch for proof print.	
	Setting	Setting range: -100 to +100 (-10.0° to +10.0°) Setting unit: 5 (0.5°) Default: 0 (0°) * (<+> for slower ON timing)	
0751	Paper feed jam detection angle. (Paper IN)		—
	Description	Sets the detection angle for paper feed jam (paper feed IN).	
	Setting	Setting range: -200 to +200 (-20.0° to +20.0°) Setting unit: 5 (0.5°) Default: 0 (0°) * (<+> for slower detection timing)	
0752	Paper feed jam detection angle. (Paper OUT)		—
	Description	Sets the detection angle for paper feed jam (paper feed OUT).	
	Setting	Setting range: -200 to +200 (-20.0° to +20.0°) Setting unit: 5 (0.5°) Default: 0 (0°) * (<+> for slower detection timing)	
0753	Paper receiving jam detection angle. (Paper IN)		—
	Description	Sets the detection angle for paper ejection jam (paper ejection IN).	
	Setting	Setting range: -500 to +500 (-50.0° to +50.0°) Setting unit: 5 (0.5°) Default: 0 (0°) * (<+> for slower detection timing)	
0754	Paper receiving jam detection angle. (Paper OUT)		—
	Description	Sets the detection angle for paper ejection jam (paper ejection OUT).	
	Setting	Setting range: -500 to +500 (-50.0° to +50.0°) Setting unit: 5 (0.5°) Default: 0 (0°) * (<+> for slower detection timing)	
0755	Paper-ejection motor speed adjustment (Proof-Print)		—
	Description	Sets the speed of the paper ejection motor for proof print.	
	Setting	Setting range: 0 (3.0 times the circumferential speed), 1 (3.4 times the circumferential speed) 2 (3.7 times the circumferential speed), 3 (4.0 times the circumferential speed) 4 (4.5 times the circumferential speed) Default: 1 (3.4 times the circumferential speed)	
0756	Paper-ejection motor speed adjustment (Print speed No.1)		—
	Description	Sets the speed of the paper ejection motor for print speed No. 1.	
	Setting	Setting range: 0 (1.5 times the circumferential speed), 1 (1.7 times the circumferential speed) 2 (1.8 times the circumferential speed), 3 (1.9 times the circumferential speed) 4 (2.0 times the circumferential speed) Default: 1 (1.7 times the circumferential speed)	
0757	Paper-ejection motor speed adjustment (Print speed No.2)		—
	Description	Sets the speed of the paper ejection motor for print speed No. 2.	
	Setting	Setting range: 0 (1.3 times the circumferential speed), 1 (1.5 times the circumferential speed) 2 (1.6 times the circumferential speed), 3 (1.7 times the circumferential speed) 4 (1.8 times the circumferential speed) Default: 1 (1.5 times the circumferential speed)	
0758	Paper-ejection motor speed adjustment (Print speed No.3)		—
	Description	Sets the speed of the paper ejection motor for print speed No. 3.	
	Setting	Setting range: 0 (1.1 times the circumferential speed), 1 (1.3 times the circumferential speed) 2 (1.4 times the circumferential speed), 3 (1.5 times the circumferential speed) 4 (1.6 times the circumferential speed) Default: 1 (1.3 times the circumferential speed)	

No.	Data setting		Print drum changeover
0759	Paper-ejection motor speed adjustment (Print speed No.4)		—
	Description	Sets the speed of the paper ejection motor for print speed No. 4.	
	Setting	Setting range:	
		0 (1.0 times the circumferential speed), 1 (1.1 times the circumferential speed) 2 (1.2 times the circumferential speed), 3 (1.3 times the circumferential speed) 4 (1.4 times the circumferential speed)	
		Default: 2 (1.2 times the circumferential speed)	
0760	Paper-ejection motor speed adjustment (Print speed No.5)		—
	Description	Sets the speed of the paper ejection motor for print speed No. 5.	
	Setting	Setting range:	
		0 (1.0 times the circumferential speed), 1 (1.1 times the circumferential speed) 2 (1.2 times the circumferential speed), 3 (1.3 times the circumferential speed) 4 (1.4 times the circumferential speed)	
		Default: 2 (1.2 times the circumferential speed)	
0761	Paper-feed-clutch ON angle (Adjustment 1)		—
	Description	Sets the speed of the paper ejection motor for high-speed printing.	
	Setting	Setting range:	
		0 (1.0 times the circumferential speed), 1 (1.1 times the circumferential speed) 2 (1.2 times the circumferential speed), 3 (1.3 times the circumferential speed) 4 (1.4 times the circumferential speed)	
		Default: 1 (1.1 times the circumferential speed)	
0779	Paper Ejection Wing Position Adjustment		—
	Description	Sets the adjustment value for the amount of paper ejection wing motion.	
	Setting	Setting range: -20 to +20 (-20 to +20 pulses) Setting unit: 1 (1 pulse) Default: 0 (0 pulse)	
0780	Paper Ejection Wing Target Position		—
	Description	Sets the positions of the paper ejection wings when the custom paper ejection position is selected. This setting is reflected in the operation set in Test Mode No. 704.	
	Setting	Setting range: 0 to 2150 (0 to 2150 pulses) Setting unit: 1 (1 pulse) Default: 1434 (1434 pulses)	
0781	Central Transport Jam Angle/IN		—
	Description	Adjusts the detection angle for paper input jams for the central transport sensor.	
	Setting	Setting range: -200 to +200 (-20.0° to +20.0°) Setting unit: 5 (0.5°) Default: 0 (0°) * (<+> for slower detection timing)	
0782	Central Transport Jam Angle/OUT		—
	Description	Adjusts the detection angle for paper output jams for the central transport sensor.	
	Setting	Setting range: -200 to +200 (-20.0° to +20.0°) Setting unit: 5 (0.5°) Default: 0 (0°) * (<+> for slower detection timing)	
0786	Second Paper Feed Speed Ratio (for all area)		B
	Description	Changes the speed of the timing roller.	
	Setting	Setting range: -20 to +20 (-2.0% to +2.0%) Setting unit: 2 (0.2%) Default: 0 (0.0%)	
0787	Second Paper Feed Speed Ratio (for first 160mm of the paper)		—
	Description	Changes the speed of the timing roller fo the distance of 160mm from the leading edge for each paper.	
	Setting	Setting range: -20 to +20 (-2.0% to +2.0%) Setting unit: 2 (0.2%) Default: 0 (0.0%)	

7. Print Drum/Print Adjustment Test Mode

No.	Sensor/switch	Detecting condition	Print drum changeover
0801	Position-B sensor	Light path blocked (blocked by shield plate)	B
0802	Main-motor limit sensor	Light path blocked (blocked by shield plate)	—
0803	Clamp sensor A	Light path blocked (blocked by shield plate)	B
0804	Clamp sensor B	Light path blocked (blocked by shield plate)	—
0805	Print Drum FG Sensor	Light path blocked (blocked by shield plate)	B
0806	Master loading sensor	Light received (master detected)	B
0807	Print-drum lock-position sensor	Light path blocked (blocked by shield plate)	B
0808	Drive Lock Release Sensor	Light path blocked (blocked by shield plate)	B
0809	Ink sensor	In contact with ink	B
0810	Overflow sensor	In contact with ink	B
0811	Ink-cartridge set SW	Switch ON (button depressed)	B
0812	Ink pump FG sensor	Light path blocked (blocked by shield plate)	B
0816	Drum free rotation SW	Switch ON (button depressed)	—
0818	Print-drum release button	Switch ON (button depressed)	—
0819	Print-drum connection signal	The print drum is connected to the main unit drawer connector.	B
0820	Print-drum safety switch	Switch ON (print drum set in machine)	B
0821	Front Cover Safety SW	Switch ON (front cover closed)	—
0830	Print-Pressure HP Sensor	Light path blocked (blocked by shield plate)	B
0832	Horizontal Home Position Sensor	Light path blocked (blocked by shield plate)	B
No.	Motor/solenoid	Remarks	Print drum changeover
0861	Main-motor action (30 rpm)	Main motor stops when STOP key is pressed.	—
0863	Clamp-motor action (Normal direction)	CCW (counterclockwise rotation)	B
0864	Clamp-motor action (Opposite direction)	CW (clockwise rotation)	B
0866	Print-drum release SW (button)	The LED illuminates.	—
0867	Print-drum brake fan	ON / OFF	—
No.	Unit check		Print drum changeover
0880	Variable print-drum rotation Rotates the print drum when the Speed key is enabled.		—
0881	Position-A action of the print drum Stops the print drum at position A.		B
0882	Inking motor ON action Operates the inking motor (maximum time: 1 sec).		B
0883	Clamp home positioning action Returns the clamp unit to the home position.		B
0884	Clamp unit cycle action (3 step cycle) Pressing the Start key once performs a single cycle of the following operations: << First clamp unit >> Step 1: Clamp home position → Clamp open Step 2: Clamp open Position A adjustment Step 3: Position A adjustment → Clamp closed (clamp at home position) << Second clamp unit >> Step 1: Clamp home position → Clamp open Step 2: Clamp open → Clamp closed (clamp at home position)		B
0885	Drum lock solenoid ON/OFF action Pressing the Start key turns the solenoid ON. The solenoid automatically switches OFF after 10 seconds.		B

No.	Unit check	Print drum changeover
0886	Pressure solenoid ON/OFF action	B
	Pressing Start key turns the solenoid ON. The solenoid automatically switches OFF after 10 seconds.	
0887	Print drum inking action	A
	Performs the following operations in the sequence indicated: 1) Ink is supplied while the print drum (until the inking sensor switches ON) rotates without applying pressure. 2) Confidential operation is executed. 3) From the time the inking sensor switches ON, the print drum rotates 10 turns while pressure applied. 4) The print drum halts at position B.	
0888	Print drum ink-drainage action	A
	Performs the ink drainage from the print drum in following sequence by one press of the START key: 1) Makes TPH test mode image on the master and wraps around the print drum. 2) Printing is started with no inking motion and with the ink sensor deactivated. 3) The printing is continued with until the STOP key is pressed. 4) The print drum stops at Position-B.	
0890	Print drum ink-code copy	B
	Copies information on the color and category used for ink cartridge and print drum compatibility from the ink cartridge tag to the print drum EEPROM. * Wait at least two seconds after setting the ink cartridge.	
0892	Machine Position-B stop (The position in which the print drum can be removed from the machine.)	B
	Stops the print drum at machine B position.	
0893	Print Drum Drive Lock Release Action	B
	The horizontal pulse motor moves the print drum to the drive lock release position.	
0894	Print Drum Drive Connection Action	B
	The horizontal pulse motor moves the print drum from the drive lock release position to the connection position.	
0895	Master Loading Step Action	B
	Performs the following operations in the sequence indicated: 1) Press the Start key. 2) The master-making unit moves to the master-loading position. (first and second master-loading positions) 3) The drive motor halts. 4) The clamp unit descends. 5) The print drum moves to the position A. 6) The clamp unit position A adjustments are made. 7) Master making unit transfer-motor brake is released after one minute. 8) Press the Start key. 9) The clamp unit returns to the home position. 10) Master making unit transfer-motor brake is released. 11) The print drum moves to position B, and the master-making unit moves to the home position. 12) Pressing the Start key repeats steps 1) through 10).	
0900	Vertical-centering action	—
	Simultaneously brings both the vertical print position motor and the second paper feed unit to the home positions, then returns the vertical print position to the center (home position).	
0901	Vertical print position one cycle action	—
	Operates the vertical drive motor up and down for one cycle.	
0902	Horizontal Home Action	B
	Returns the print drum horizontal position to the center (home position).	
0903	Horizontal Cycle Action	B
	Performs a single horizontal movement cycle.	

No.	Unit check		Print drum changeover
0904	Print-pressure home positioning		B
	Returns the pressure control unit to the home position.		
0905	Print-pressure one cycle action		B
	Performs a single print pressure control cycle.		
0906	Pressure Roller Maintenance Position		B
	Pressing the Start key raises the pressure roller. * This operation is activated only if the Start key is pressed with the print drum removed and the front cover closed.		
0907	Pressure Roller Maintenance Position Cancel		—
	Pressing the Start key lowers the pressure roller. * This operation is activated only if the Start key is pressed with the print drum removed and the front cover closed.		
0908	Print-pressure maintenance positioning		B
	Operates the pressure control pulse motor until the pressure spring removal position (-8130 pulses) is reached.		
No.	Data check	Content of display	Print drum changeover
0921	Print-drum angle display	Displays the current print drum angle (x 10).	B
0923	Print-drum ink temperature display	Displays the temperature value (°C) converted from the A/D value of the ink thermistor.	B
0925	Ink remaining volume display	Displays the amount of ink left in the ink cartridge as a percent (%) value read from the ink cartridge tag.	B
0926	Ink motor FG count	Displays the inking motor FG count value read from the ink cartridge tag. (1 count = 0.1 ml)	B
0928	Displays the Ink use starting date.	Displays the ink use start date stored in the ink cartridge tag. * For example, <2003/2/28> is displayed by alternating indications of <2003> and <0228>.	B
0929	Main motor offset voltage information	Displays the main motor offset voltage information acquired by test mode adjustment No.1105.	—
0930	Main motor setting information	Displays the main motor setting information acquired by test mode adjustment No.1105.	—
0931	Second paper feed motor offset voltage information	Displays the second paper feed motor offset voltage information acquired by test mode adjustment No.1106.	—
0932	Second paper feed motor setting information	Displays the second paper feed motor setting information acquired by test mode adjustment No.1106.	—
No.	Data setting		Print drum changeover
0940	Master loading sensor detection timing adjustment		B
	Description	Adjusts the master-loading detection angle.	
	Setting	Setting range: -200 to +100 (-20.0° to +10.0°) Setting unit: 5 (0.5°) Default: 0 (0°) * (<+> for slower detection timing)	
0941	Print-drum Position-A adjustment		B
	Description	Adjusts the print drum position-A stop position.	
	Setting	Setting range: -40 to +40 (-4.0° to +4.0°) Setting unit: 5 (0.5°) Default: 0 (0°) * (<+> for overrun)	
0942	Print-drum position-B adjustment		B
	Description	Adjusts the print drum position-B stop position.	
	Setting	Setting range: -40 to +40 (-4.0° to +4.0°) Setting unit: 5 (0.5°) Default: 0 (0°) * (<+> for overrun)	
0943	Inking time adjustment (when over X% of ink is consumed from the ink tube.)		B
	Description	Sets the continuous ink sensor OFF detection time that prompts the inkless detection signal if the amount of ink consumed exceeds a set percent value (value set in Test Mode No. 948) (data stored in print drum PCB).	
	Setting	Setting range: 5 to 60 (5 to 60 sec) Setting unit: 1 (1 sec) Default: 10 (10 sec)	

No.	Data setting		Print drum changeover
0944	Inking time adjustment (right after the ink tube is replaced)		B
	Description	Sets the continuous ink sensor OFF detection time that prompts the inkless detection signal after ink cartridge replacement (data stored in print drum PCB). * This information is recorded in the print drum EEPROM.	
	Setting	Setting range: 5 to 60 (5 to 60 sec) Setting unit: 1 (1 sec) Default: 30 (30 sec)	
0945	Ink overflow detection frequency adjustment		B
	Description	Sets how frequently overflow sensor detection operations are performed to determine ink overflows. * This information is recorded in the print drum EEPROM.	
	Setting	Setting range: 1 to 200 (1 to 200 times) Setting unit: 1 (Once) Default: 50 (50 times)	
0946	Inking time adjustment (when under X% of ink is consumed from the ink tube.)		B
	Description	Sets the continuous ink sensor OFF detection time that prompts the inkless detection signal when the consumed ink volume is less than the set percentage (value set in Test Mode No. 948) (data stored in print drum PCB). * This information is recorded in the print drum EEPROM.	
	Setting	Setting range: 1 to 60 (1 to 60 sec) Setting unit: 1 (1 sec) Default: 15 (15 sec)	
0947	Inking drum rotation quantity (while inking) after ink tube is pulled out and put back.		B
	Description	Specifies the number of print drum rotations to be performed after ink cartridge removal/installation.	
	Setting	Setting range: 0 to 10 (0 to 10 times) Setting unit: 1 (Once) Default: 1 (Once)	
0948	Selection of X% for test modes No. 0943 and 0946.		B
	Description	Determines the inkless detection timing switching condition (ink consumption) based on remaining ink volume.	
	Setting	Setting range: 1 to 100 (1% to 100%) Setting unit: 1 (1%) Default: 80 (80%)	
0949	Print pressure setting for Proof-read printing (black ink)		—
	Description	Selects the print pressure table for determining the density of the first print (using black ink).	
	Setting	Setting range: 0 (very low density), 1 (low density), 2 (normal), 3 (high density), 4 (very high density) Default: 2 (normal)	
0950	Print pressure setting for Proof-read printing (color ink)		—
	Description	Selects the print pressure table for determining the density of the first print (using color ink).	
	Setting	Setting range: 0 (very low density), 1 (low density), 2 (normal), 3 (high density), 4 (very high density) Default: 2 (normal)	
0951	Ink Color Code		B
	Description	Sets the color of ink to be set in the print drum (data stored in print drum PCB).	
	Setting	Setting range: 0 (Not specified) 64 (Black) 67 (Blue3) 65 (Blue) 66 (Blue2) 70 (Red2) 68 (Blue4) 69 (Red) 73 (Green) 71 (Red3) 72 (Red4) 76 (Yellow) 74 (Green2) 75 (Green3) 79 (Brown2) 77 (Yellow2) 78 (Brown) 82 (Gray) 80 (Purple) 81 (Purple2) 85 (Light gray2) 83 (Gray2) 84 (Light gray) 88 (Gold) 86 (Orange) 87 (Orange2) 91 (Silver2) 89 (Gold2) 90 (Silver) 94 (Special color) 92 (Pink) 93 (Pink2) Default: 0 (Not specified)	

No.	Data setting		Print drum changeover
0955	Print Drum Insertion Angle Fine Adjustment		B
	Description	This adjustment is performed if the print drum cannot be inserted even after making the adjustment in Test Mode No. 942 (Print-drum Position-B adjustment) (data stored in print drum PCB). * The position-B positioning operation is based on a value equal to the sum of the values in Test Mode No. 942 and No. 955. This value is between -40 and +40. The same value also applies when the print drum does engage.	
	Setting	Setting range: -40 to +40 (-4.0° to +4.0°) Setting unit: 1 (0.1°) Default: 0 (0°)	
0956	Automatic Print Position Reset Condition Setting		-
	Description	Selects the condition for automatic print position reset after master-making or renewal. * After automatic reset, a proof copy is output and the TC count is incremented. * In dual-color printing, an automatic reset is performed after master-making by both print drums, and a proof copy is output.	
		Setting range:	
		0 (No automatic reset) * Remains at center after master-making/renewal	
		1 (Automatic reset only after master renewal) 2 (Automatic reset after master-making and renewal) Default: 0 (No automatic reset)	
0969	Vertical Print HP Position Adj		-
	Description	Sets the home position offset value for the vertical print position phase difference.	
	Setting	Setting range: -50 to +50 (-5.0 to +5.0 mm) Setting unit: 1 (0.1 mm) Default: 0 (0 mm) * (<+> for adjustment up)	
0971	Vertical HP Paper Feed Timing Adj		B
	Description	Sets the home position offset value for the vertical print position (second paper feed timing).	
	Setting	Setting range: -50 to +50 (-5.0 to +5.0 mm) Setting unit: 1 (0.1 mm) Default: 0 (0 mm) * (<+> for adjustment up)	
0972	Printing pressure HP adjustment		B
	Description	Sets the offset value for the print pressure position (data stored in print drum PCB). * This setting should be made only when required by the print drum. * Printing pressure HP adjustment is based on a value equal to the sum of the values in Test Mode No. 972 and No. 975. This value is between -500 and +500.	
	Setting	Setting range: -500 to +500 (-5000 to +5000 pulses)	
		* (<+> for increased print pressure) Setting unit: 1 (10 pulses) Default: 0 (0 pulse)	
0973	Horizontal HP Adjustment (Print Drum)		B
	Description	Sets the offset value for the horizontal print home position (data stored in print drum PCB). * This setting should be made only when required by the print drum. * Horizontal print HP adjustments are made based on a value equal to the sum of the values in Test Mode No. 973 and No. 974. This value is between -20 and +20.	
	Setting	Setting range: -20 to +20 (-2.0 to +2.0 mm) Setting unit: 1 (0.1 mm) Default: 0 (0 mm) * (<+> for adjustment left)	
0974	Horizontal HP Adjustment (Machine)		B
	Description	Sets the offset value for the horizontal print home position. * This setting should be made only when required by the machine. * Horizontal print HP adjustments are made based on a value equal to the sum of the values in Test Mode No. 973 and No. 974. This value is between -20 and +20.	
	Setting	Setting range: -20 to +20 (-2.0 to +2.0 mm) Setting unit: 1 (0.1 mm) Default: 0 (0 mm) * (<+> for adjustment left)	

No.	Data setting		Print drum changeover
0975	Printing Pressure HP Position Adjustment (Machine)		B
	Description	Sets the offset value for the print pressure position. * This setting should be made only when required by the machine. * The printing pressure HP adjustments are made based on a value equal to the sum of the values in Test Mode No. 972 and No. 975. This value is between -500 and +500.	
	Setting	Setting range: -500 to +500 (-5000 to +5000 pulses) * (<+> for increased print pressure)	
		Setting unit: 1 (10 pulses) Default: 0 (0 pulse)	
0976	Print Drum Inside Adjustment Selection		B
	Description	Selects the area for storing adjustment values specific to each print drum. Set a unique number if two or more machines are used. Each print drum can recognize up to three machines.	
	Setting	Setting range: 0 to 2 Setting unit: 1 Default: 0	
0977	Vertical and Horizontal Motion Distance Switching		-
	Description	Selects whether the motion increment is set to 0.1 mm or 0.5 mm if the fine adjustment button is not displayed.	
	Setting	Setting range: 0 (0.5 mm) Setting unit: 1 (0.1 mm) Default: 0 (0.5 mm)	
0978	Number of Idling Selection		-
	Description	Selection of the print drum rotation quantity table between Japan and Overseas.	
	Setting	Setting range: 0 (Japan) 1 (Overseas) Default: 1 (Overseas)	
0979	Pressure Table Configuration		-
	Description	Shifts the printing density table to darker printing.	
	Setting	Setting range: 0 = Normal density table. 1 = 1.5 times darker. 2 = 2.0 times darker. Default: 0 (Normal density table)	
0989	Interval Upper Limit Setting		-
	Description	Selects the maximum print drum rotation between printing in Interval printing mode.	
	Setting	Setting range: 0 (maximum 10 times) 1 (maximum 99 times) Default: 0 (maximum 10 times)	

8. Protected Area Test Mode

<< Starting up the Protected Area Test Mode >>

With the machine on standby in normal Test Mode, enter <9874> using the numeric keypad of the operation panel, then press the Start key.

No.	Unit check		Print drum changeover
1102	Paper size VR adjustment		—
	Sets the VR value for 105 mm (A6 paper width).		
1103	Paper size VR adjustment		—
	Sets the VR value for 297 mm (A3 paper width).		
1104	LCD Base Point Compensation		—
	Make adjustments as described below. 1. Touch two points located at diagonally opposite points on the panel. 2. Display the confirmation screen, touch three points, and confirm that the compensation is performed properly.		
1105	Main Motor Parameter Acquisition Mode		—
	Sets the main motor control parameters for stable motor control in the DSP, including machine and motor variations (operation time: approx. 15 sec). * Both print drum drives must be connected during this operation.		
1106	Second Paper Feed Motor Parameter Acquisition Mode		—
	Sets the second paper feed motor control parameters for stable motor control in the DSP, including machine and motor variations. (operation time: approx. 20 sec) * The guide roller must be in its lowered position during this operation.		
No.	Data clear	Details	Print drum changeover
1198	Initialize Memory	Initializes the mechanical unit PCB memory.	—
No.	Data setting		Print drum changeover
1201	Paper Size Selection		—
	Description	Selects the paper size detection unit in either INCH, MILLIMETER or CHINESE.	
	Setting	Setting range: 0 (Millimeter) 1 (Chinese) 2 (Inch)	
1210	Drum Code Entry		B
	Description	Sets print drum information and size information in the print drum EEPROM (data stored in print drum PCB).	
	Setting	Setting range: 0 to 255 Default: 0	
1211	Drum Serial Code Entry 1		B
	Description	Inputs the initial 4 digits of the print drum serial code (data stored in print drum PCB).	
	Setting	Setting range: 0 to 9999 Setting unit: 1 Default: 0	
1212	Drum Serial Code Entry 2		B
	Description	Inputs the last 4 digits of the print drum serial code (data stored in print drum PCB).	
	Setting	Setting range: 0 to 9999 Setting unit: 1 Default: 0	

No.	Data setting		Print drum changeover
1214	Drum Color Code Entry		B
	Description	Sets the print drum color information in the print drum EEPROM (data stored in print drum PCB).	
	Setting	Setting range:	
		0 (Not specified) 2 (Blue) 4 (Red) 6 (Riso Federal Blue) 8 (Riso Marine Red) 10 (Green) 12 (Brown) 14 (Light Gray) 16 (Fluorescence Pink) 17 (Fluorescence Orange) 18 (Orange) 20 (Hunter Green) 30 (Custom color) 32 (Order: paper not specified) Default: 0 (Not specified)	
		1 (Black) 3 (Medium Blue) 5 (Bright Red) 7 (Purple) 9 (Burgundy) 11 (Teal) 13 (Yellow) 15 (Gray) 19 (Flat Gold) 21 (Crimson) 31 (Order: paper specified) 63 (Any color)	
1215	Drum Ink Category Entry (First/Second)		B
	Description	Sets the ink category code (3 bits) stored in the print drum EEPROM (data stored in print drum PCB).	
	Setting	Setting range:	
		0 (Not specified) 1 (normal) 2 (HD) 3 (Spare 1) 4 (Spare 2) 5 (Spare 3) 6 (Spare 4) 7 (Spare 5) Default: 0 (Not specified)	
1220	Scanner Adjustment (1) Sub-Scanning		—
	Description	Sets the value indicated on the sticker affixed to the scanner unit.	
	Setting	Setting range: 89 to 167 Setting unit: 1 Default: 128	
1221	Scanner Adjustment (2) Main-Scanning		—
	Description	Sets the value indicated on the sticker affixed to the scanner unit.	
	Setting	Setting range: 81 to 175 Setting unit: 1 Default: 128	
1222	Scanner Adjustment (3) Sub-Scanning Ratio		—
	Description	Sets the value indicated on the sticker affixed to the scanner unit.	
	Setting	Setting range: 46 to 54 Setting unit: 1 Default: 50	
1223	Scanner Adjustment (4) Offset		—
	Description	Sets the value indicated on the sticker affixed to the scanner unit.	
	Setting	Setting range: 0 to 255 Setting unit: 1 Default: 64 * The setting value varies automatically after offset adjustment, and the most recent setting value is used for the next offset adjustment. However, the value displayed in Test Mode does not change until the machine is restarted.	

No.	Data setting		Print drum changeover
1224	Scanner Adjustment (5) Gain		—
	Description	Sets the value indicated on the sticker affixed to the scanner unit.	
	Setting	Setting range: 0 to 255 Setting unit: 1 Default: 32 * The setting value varies automatically after gain adjustment, and the most recent setting value is used for the next gain adjustment. However, the value displayed in Test Mode does not change until the machine is restarted.	
1229	Linked Printer Enable Control		—
	Description	Enables/disables linked printer function.	
	Setting	Setting range: 0 (Disabled), 1 (Enabled) Default: 0 (Disabled)	
1231	LCD Contrast Adjustment		—
	Description	Adjusts panel contrast.	
	Setting	Setting range: -120 to +120 Setting unit: 1 Default: 0	
1232	LCD Backlight Adjustment		—
	Description	Adjusts panel backlighting.	
	Setting	Setting range: 50 to 115 Setting unit: 1 Default: 85	
1233	TPH master-making horizontal position adjustment		B
	Description	Adjusts the horizontal print position of the thermal print head.	
	Setting	Setting range: -30 to +30 (-3.0 mm to +3.0 mm) Setting unit: 1 (0.1 mm) Default: 0 (0 mm) * (<+> for adjustment left)	
1234	TPH resistance input		—
	Description	Sets thermal print head resistance.	
	Setting	Setting range: 1200 to 2300 (1200 ohm to 2300 ohm) Setting unit: 1 (1 ohm) Default: 1200 ohm	
1235	Scanner Selection		—
	Description	Selection of scanner unit mounted on the machine (Millimeter type or Inch type).	
	Setting	Setting range: 0 (Millimeter machine). 1 (Inch machine) - for U.S.A. only. Default: 0 (Millimeter model machine) for all areas excluding U.S.A. 1 (Inch model machine) for machine to U.S.A. only.	
1237	Scanning Speed Change : 2/4 Times		—
	Description	Selection of scanner unit mounted on the machine (Type-1, Type-2 or Type-3).	
	Setting	Setting range: 0 (Original factory setting). 1 (Scanner changed from Type-1 to Type-2). 2 (Scanner changed from Type-2 to Type-3). Default: 0 (Original factory setting).	
1242	Scanning Adjustment (7) Offset-2		—
	Description	Sets the value indicated on the sticker affixed to the scanner unit.	
	Setting	Setting range: -255 to +255 Setting unit: 1 Default: 64	
1243	Scanning Adjustment (8) Gain-2		—
	Description	Sets the value indicated on the sticker affixed to the scanner unit.	
	Setting	Setting range: 0 to +255 Setting unit: 1 Default: 32	

9. Test Mode for Optional Unit (AF)

No.	Sensor/switch	Detecting condition	Print drum changeover
3000	AF-unit joint signal check	An AF is connected.	—
3001	AF Original registration sensor	Light path blocked (original detected)	—
3002	AF Original IN sensor	Light path blocked (original detected)	—
3003	AF Original OUT sensor	Light path blocked (original detected)	—
3004	AF original detection sensor	Original is detected.	—
3005	AF Cover Set SW	Switch ON (AF closed)	—
3006	AF Original Size Sensor 1	Light received (original detected)	—
3007	AF Original Size Sensor 2	Light received (original detected)	—
3008	AF Original Feed Cover Sensor	Sensor ON (cover closed) <Duplex AF only>	—
3009	AF Original Width Detection Sensor 1	Sensor ON (width less than 235mm) <Duplex AF only>	—
3010	AF Original Width Detection Sensor 2	Sensor ON (width larger than 270mm or less than 190mm) <Duplex AF only>	—
3011	AF Original End Detection Sensor	Sensor ON (original detected) <Duplex AF only>	—
3012	AF Flipper Sensor	Sensor ON (original detected) <Duplex AF only>	—
No.	Motor/solenoid	Remarks	Print drum changeover
3030	AF read pulse-motor CW	Rotates the AF read pulse motor in feed direction.	—
3032	AF Read/Switch-back Pulse Motor	AF original feed & switch-back pulse motor operation. <Duplex AF only>	—
3033	AF Transfer Pulse Motor	AF transfer pulse motor operation. <Duplex AF only>	—
No.	Unit check		Print drum changeover
3041	AF one cycle action with no Auto Base Control		—
	Performs a single AF scanning cycle. Picks up original -> Scanner unit returns to home position -> Shading -> Scanner unit moves to scanning position -> Scans and ejects original -> Scanner unit returns to home position		
3042	AF original feed action		—
	Performs AF original feed operation. Picks up original -> Scans original (original transport)		
3044	AF Original IN Sensor Sensitivity Adjustment		—
	Adjusts the sensitivity of the original IN sensor.		
3045	AF Original Guide Minimum Width		—
	Sets the VR value when the paper guides are brought to the minimum-width position.		
3046	AF Original Guide Maximum Width		—
	Sets the VR value when the paper guides are brought to the maximum-width position.		
3047	AF Original Feed Clutch Check		—
	Activates the original feed clutch for 10 seconds. <Duplex AF only>		
3048	AF Original Feed Base Solenoid Check		—
	Activates the original feed base solenoid for 10 seconds. <Duplex AF only>		
3049	AF Flipper Solenoid Check		—
	Activates the flipper solenoid for 10 seconds. <Duplex AF only>		

No.	Data check	Content of display	Print drum changeover
3060	AF Original Width (A/D)	Displays the A/D value of the AF original width.	—
3061	AF Original Size Code	Millimeter Machine 00: No paper 01: A3 02: B4 03: A4 04: A4 Landscape 05: B5 06: B5 Landscape 07: A5 08: A5 Landscape (09: B6) 19: Foolscap (53: Irregular Size) The paper sizes in parentheses are displayed for simplex AF Unit but not on duplex AF Unit. Inch machine (U.S.A.) 00: No paper 13: Ledger 14: Legal 15: Letter 16: Letter Landscape 17: Statement 18: Statement Landscape 53: Irregular Size	—
No.	Data setting		Print drum changeover
3070	Scanner unit scanning position adjustment (AF scanning)		—
	Description	Adjusts mirror (carriage) stop position in AF scanning operation.	
	Setting	Setting range: -20 to +20 (-2.0 mm to +2.0 mm) * (<+> for adjustment up) Setting unit: 1 (0.1 mm) Default: 0 (0 mm)	
3071	Mirror carriage position adjustment for Auto-Base-Control (AF scanning)		—
	Description	Adjusts AF Auto-Base-Control mirror stop position.	
	Setting	Setting range: 0 to 30 (0 mm to 3.0 mm) * (<+> for adjustment up) Setting unit: 1 (0.1 mm) Default: 0 (0 mm) Only for Simplex AF Unit.	
3072	Scanning horizontal centering position adjustment (AF scanning)		—
	Description	Adjusts horizontal position for scanning of original by the AF. Separate setting for the flatbed.	
	Setting	Setting range: -30 to +30 (-3.0 mm to +3.0 mm) * (<+> for adjustment left) Setting unit: 5 (0.5 mm) Default: 0 (0 mm)	
3073	Scanning start-position adjustment. (AF scanning)		—
	Description	Adjusts original scanning start position (amount of scan skip) for the AF.	
	Setting	Setting range: -60 to +60 (-6.0 mm to +6.0 mm) * (<+> for adjustment up) Setting unit: 1 (0.1 mm) Default: 0 (0 mm)	
3074	Scanning-speed adjustment to control Elongation & Shrinkage in scanning. (AF scanning)		—
	Description	Adjusts original scanning speed for the AF. (Adjusts AF read pulse motor speed.)	
	Setting	Setting range: -50 to +50 (-5.0% to +5.0%) * (<+> to stretch) Setting unit: 1 (0.1%) Default: 0 (0%)	
3076	AF Original END Signal Timing		—
	Description	Adjusts original scanning end position.	
	Setting	Setting range: -63 to +63 (-6.3 mm to +6.3 mm) * (<+> for adjustment down) Setting unit: 1 (0.1 mm) Default: 0 (0 mm)	
3077	AF Original Feed Sequence Change <Duplex AF only>		—
	Description	AF original transfer action selection (1 cycle action).	
	Setting	Setting range: 0: Simplex 1: Duplex 2: Simplex (overside) for Sorter connection Default: 0 (Simplex)	

10. Test Mode for Optional Unit (Job Separator)

No.	Sensor/switch	Detecting condition	Print drum changeover
3100	Job separator tape jam sensor	Turns ON when tape is jammed.	—
3101	Job separator tape detection sensor	Turns ON where tape is detected.	—
3102	Job separator power switch	Switch ON	—
3103	Job separator connection signal	A job separator is connected.	—
No.	Unit check		Print drum changeover
3140	Tape output		—
	Outputs one tape.		
No.	Data setting		Print drum changeover
3170	Stamping quantity		—
	Description	Sets the number of stamping operations during Test Mode No. 3140 (Tape Output).	
	Setting	Setting range: 0 (No stamping) 1 (1 stamping) 2 (2 stamping) Default: 0 (No stamping)	
3171	Tape jammed message <activate or deactivate>		—
	Description	Displays/hides the tape jam error in tape output.	
	Setting	Setting range: 0 (Disable) 1 (Enable) Default: 1 (Enable)	

11. Test Mode for Optional Unit (Storage Memory)

No.	Unit check		Print drum changeover
3340	Storage Memory Configuration Change		—
	Processing for changing the card used by the RP to a configuration compatible with the current machine. * Reconfigured card cannot be used by the RP. * Only one storage device should be set in the slot to permit configuration adjustments. (Two cards cannot be processed simultaneously.)		
3341	PS7R Status Printout		—
	With PS7R controller connected, the PS7R status page master is made and printed out.		
No.	Data clear	Details	Print drum changeover
3355	Storage Memory Initialize (32M)	Initializes the storage device to delete data from the 32M storage device or when an error related to storage device prevents data restoration. * Only one storage device can be set in the slot for initialization.	—
3356	Storage Memory Initialize (128M)	Initializes the storage device to delete data from the 128M storage device or when an error related to storage device prevents data restoration. * Only one storage device can be set in the slot for initialization.	—
No.	Data check	Content of display	Print drum changeover
3361	Storage Memory Information	Displays the volume label, capacity, area used, and available storage area. * Only one storage device can be set in the slot.	—

12. Test Mode for Optional Unit (LBP)

No.	Data setting		Print drum changeover
3570	RLP Print Position Adjustment (Main)		—
	Description	Adjusts RLP print position (main scanning direction). * If multiple RLP units are installed, this setting will affect all units.	
	Setting	Setting range: –50 to +50 (–5.0 mm to +5.0 * (<+> for adjustment left) mm) Setting unit: 1 (0.1 mm) Default: 0 (0 mm)	
3571	RLP Print Position Adjustment (Sub)		—
	Description	Adjusts RLP print position (sub scanning direction). * If multiple RLP units are installed, this setting will affect all units.	
	Setting	Setting range: –50 to +50 (–5.0 mm to +5.0 * (<+> for adjustment up) mm) Setting unit: 1 (0.1 mm) Default: 0 (0 mm)	
3572	Zero Print Master-making Warning		—
	Description	If auto-link is turned ON, master-making is performed when the print quantity is 0 in PtoP mode. This setting determines whether the warning (F60) is displayed during this operation.	
	Setting	Setting 0: (Without warning) range: 1: (With warning) Default: 0: (Without warning)	
3579	RLP Duplex Print Auto-Repeat		—
	Description	Sets whether the screen setting is turned OFF or reset automatically after duplex printing is completed.	
	Setting	Setting 0: (Off) range: 1: (Reset) Default: 1: (Reset)	

MEMO

CHAPTER 16: PANEL MESSAGE

Contents

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1) List of panel messages

Error type	Description
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T02	Elevator motor lock
T03	Clamp motor lock [Drum No.1]
T04	Ink overflow [Drum No.1]
T05	Print positioning pulse motor lock
T06	Horizontal pulse motor lock [Drum No.1]
T11	Print pressure control pulse motor lock [Drum No.1]
T12	Master disposal section motor lock [Drum No.1]
T13	Cutter motor lock
T14	Flatbed error
T15	AF error
T17	Solenoid counter not connected
T19	Thermal pressure motor lock
T20	Paper ejection section motor lock
T24	Inking motor lock [Drum No.1]
T25	No-battery error
T27	Master-making unit motor lock [Drum No.1]
T29	Guide release motor lock
T31	Central flap motor lock
T41	Main motor lock [Drum No.2]
T43	Clamp motor lock [Drum No.2]
T44	Overflow [Drum No.2]
T46	Horizontal pulse motor lock [Drum No.2]
T51	Print pressure control pulse motor lock [Drum No.2]
T52	Master disposal section motor lock [Drum No.2]
T64	Inking motor lock [Drum No.2]
T67	Master-making unit motor lock [Drum No.2]
T91	Panel EEPROM error
T92	Print drum EEPROM write error
T93	NET-D hardware error
T94	Call service error: TPH

Error type	Description
T95	FRAM error
T96	Data not input
T97	PC card access error
T98	Hardware error
T99	Software error

Error type	Description
A01	Master feed error
A02	Master loading error [Drum No.1]
A04	Master removal error [Drum No.1]
A05	Master present in master removal section [Drum No.1]
A06	Paper feed tray check
A07	Paper feed error
A08	Paper jam [Drum No.1]
A09	Paper ejection error
A10	AF original feed error
A16	Awaiting removal of master [Drum No.1]
A17	A17 [Cutter error]
A25	Central transport error
A34	Awaiting master reset
A42	Master loading error [Drum No.2]
A44	Master removal error [Drum No.2]
A45	Master present in master removal section [Drum No.2]
A48	Paper jam [Drum No.2]
A56	Awaiting removal of master [Drum No.2]

Error type	Description
B01	Card counter: No card
B21	Storage memory: Read/write error
B22	Job separator: Power OFF error
B23	Job separator: No-tape error
B24	Job separator: Jam error
B31	Network cable not connected
B32	NIC: External communication error
B33	IP address setup error
B34	RLP (linked printer): No-toner error
B35	RLP (linked printer): Service error

Error type	Description
C01	Ink cartridge replacement [Drum No.1]
C02	Master roll replacement
C03	Master disposal box full [Drum No.1]
C04	No-paper error
C05	Both master disposal boxes full
C41	Ink cartridge replacement [Drum No.2]
C43	Master disposal box full [Drum No.2]

Error type	Description
D01	Print drum not installed [Drum No.1]
D02	Print drum incompatibility [Drum No.1]
D03	Ink cartridge not installed [Drum No.1]
D04	Ink cartridge incompatibility [Drum No.1]
D05	Master not installed
D07	Master disposal box not installed [Drum No.1]
D08	Master-making unit not installed
D09	Master-making unit top cover not closed
D11	Front cover not closed
D13	Machine rear cover not closed
D17	Master incompatibility
D18	Print drum ready to pull-out [Drum No. 1]
D19	Master-making unit ready to pull out
D20	Master-making unit drawer cover not closed
D21	Master-making unit drawer cover ready to open
D22	Print drum pull-out command [Drum No.1]
D23	AF Feed cover opened
D30	Front cover setting demand
D41	Print drum not installed [Drum No.2]
D42	Print drum incompatibility [Drum No.2]
D43	Ink cartridge not installed [Drum No.2]
D44	Ink cartridge incompatibility [Drum No.2]
D47	Master disposal box not installed [Drum No.2]
D58	Print drum ready to pull-out [Drum No. 2]
D62	Print drum pull-out command [Drum No.2]

Error type	Description
E01	Battery replacement
E02	Maintenance call

Error type	Description
F01	No master on Drum No.1
F02	Paper/master-making size incompatibility 1
F03	Multi-up: Paper size error
F10	Paper/master-making size incompatibility 2
F24	Auto size reproduction disabled (falls outside range of possible size reproduction)
F30	Multiple feed check
F32	Storage memory: No space available
F37	Combined use of book mode and AF not possible
F43	DtoP original/paper incompatibility
F44	Auto size reproduction disabled (exceeds original size detection range)
F45	Presence of original unknown/no original
F46	Print drum color not matching with DtoP job color [Drum No. 1]
F47	Combined use of AF and postcard size reproduction not possible
F48	Multi-up: Outside original size detection range
F49	Multi-up: No original when Start key pressed
F52	Use of RLP mode not possible (RLP information not acquired)
F58	Use of RLP mode not possible (NET-D initialization in process)
F60	RLP auto-link/master-making continuation confirmation (when printing quantity is 0)
F61	RLP paper/original size incompatibility
F62	RLP auto-link/RLP error
F63	RLP auto tray selection/nonstandard-size original
F64	Specified function disabled, at job reception
F65	Scan mode auto-saving size selection/non-standard size original
F66	RLP saddle stitching not possible
F67	RLP rotation sorting not possible
F68	Specified area/traced color separation: Excess number of specified areas
F69	Specified area/traced color separation: Distance of border for specified area longer than master-making size

Error type	Description
F70	Specified area/traced color separation: Image processing time-out error
F71	No master on Drum No.2
F72	Hand-written/red-color separation: Image processing time-out error
F73	Auto tray selection not possible, RLP tray designation disabled
F74	150ppm not possible due to low temperature
F75	Combined use of specified area separation and AF not possible
F76	Print drum color not matching with DtoP job color [Drum No.2]
F77	Print drum color not matching with DtoP job color [Drum No.1]
F78	Digitizer: Stage cover open
F79	Digitizer: No original during rescanning
F80	Paper not compatible with dual-color printing
F81	Dual-color printing: Ink-saving mode set on only one print drum
F82	Paper not compatible for Drum No.2 printing
F83	Use of Drum No.2 mode not possible
F85	Scanning not possible: External CI not connected
F90	Supply stock management (ink)
F91	Supply stock management (master)
F93	Reproduction ratio is larger than master making area
F94	Protect confirmation (compulsory)
F95	Protect confirmation

Error type	Description
H01	Generic supply parameter input (Drum No.1)
H04	Generic supply parameter input (master)
H07	Generic supply parameter input (Drum No.2)

2) Details of error codes

1. Service engineer call errors (T**)

Error type	T01 [Main motor lock] (Drum No.1)
Panel display	T01-*** !!System Error!! Press Reset Key If Recovery has Failed, Call Service
Error reset method	Press the Reset key.
Error point	Error detecting condition
520	Main motor lock [1] detected. The main motor FG sensor count reduced to 50% from the set speed.
521	The position B sensor does not change status within 2910 pulses while the main motor is ON.
523	Main motor lock [2] detected. (The main motor lock detected by DSP)
537	The print drum fails to stop at position B.
538	The print drum is not locked during operations.

Error type	T02 [Elevator motor lock]
Panel display	T02-*** !!System Error!! Press Reset Key If Recovery has Failed, Call Service
Error reset method	Press the Reset key or switch power OFF, then ON.
Error point	Error detecting condition
400	The elevator upper-limit position detection and the elevator lower-limit detection are switches ON simultaneously.
401	Elevator motor overload detected. The elevator motor overcurrent port was activated 5 consecutive times (polling at 10-msec intervals).
404	The elevator lower-limit sensor does not switch OFF within 2 seconds after the elevator motor applies a lifting force from the elevator lower-limit position.
405	The elevator upper-limit sensor does not switch ON within 12 seconds after the elevator motor applies a lifting force.
406	The elevator upper-limit sensor does not switch OFF within 2 seconds after the elevator motor applies a lowering force from the elevator upper-limit position.
407	The elevator lower-limit sensor does not switch ON within 12 seconds after the elevator motor applies a lowering force.
408	The elevator upper-limit sensor remained OFF for more than 2 seconds during elevator servo action.

Error type	T03 [Clamp motor lock] (Drum No.1)
Panel display	T03-*** !!System Error!! Press Reset Key If Recovery has Failed, Call Service
Error reset method	Press the Reset key.
Error point	Error detecting condition
500	The clamp sensor A of the Clamp No.1 is OFF at the end of the clamp movement.
501	The clamp sensor B of the Clamp No.1 does not change status within 1 second after the clamp motor operates in the forward direction.
502	The clamp sensor B does not change status within 1 second after the clamp motor operates in the reverse direction.
503	The clamp sensor A of the Clamp No.1 does not switch ON within 3 seconds during clamp unit initialization.
504	The logical values of the clamp sensors A and B of the Clamp No.1 do not match at the start of the clamp releasing operation.
505	The logical values of the clamp sensors A and B of the Clamp No.1 do not match at the start of the print drum position-A compensation operation.
506	The logical values of the clamp sensors A and B of the Clamp No.1 do not match at the start of the clamp unit home positioning operation.
507	The clamp sensor A of the Clamp No.1 is ON after completion of the clamp releasing operation.
508	The clamp sensor A of the Clamp No.1 is ON after completion of the print drum position-A compensation operation.
514	The print drum is not at the horizontal home position while the clamp unit operates.
545	The clamp unit is not at the specified position at the start of print drum rotation.
546	The clamp unit is not at the home position at the start of print drum horizontal movement.
547	The clamp unit is not at the home position when the master-making unit slides.

Error type	T04 [Ink overflow] (Drum No.1)
Panel display	T04-*** !!System Error!! Press Reset Key If Recovery has Failed, Call Service
Error reset method	Press the Reset key with the overflow sensor switched OFF.
Error point	Error detecting condition
513	The overflow sensor switches ON successively for the set number of times during the 10-ms-interval overflow sensor check.

Error type	T05 [Print positioning pulse motor lock]
Panel display	T05-*** !!System Error!! Press Reset Key If Recovery has Failed, Call Service
Error reset method	Press the Reset key or switch power OFF, then ON.
Error point	Error detecting condition
603	The Vertical Print Positioning Pulse Motor did not complete the movement within the set time when the motor rotated in the print image downward direction.
604	The Vertical Print Positioning Pulse Motor did not complete the movement within the set time when the motor rotated in the print image upward direction.

Error type	T06 [Horizontal pulse motor lock] (Drum No.1)
Panel display	T06-*** !!System Error!! Press Reset Key If Recovery has Failed, Call Service
Error reset method	Press the Reset key or switch power OFF, then ON.
Error point	Error detecting condition
607	The horizontal home position sensor detects no light within the set period after the print drum drive releasing operation started.
608	The light path of the horizontal home position sensor is not blocked within the set time after the print drum connecting operation started.
609	Although the horizontal pulse motor has completed the operation in sensor stop mode, the logical value of the sensor at the arrival point does not match the design value, or the operation fails to complete in counter stop mode within the specified time.
627	The light path of the drive release home position sensor is not blocked during print drum drive connecting operation.
628	The light path of the drive release home position sensor is not detected during print drum drive release operation.

Error type	T11 [Print pressure control pulse motor lock] (Drum No.1)
Panel display	T11-*** !!System Error!! Press Reset Key If Recovery has Failed, Call Service
Error reset method	Press the Reset key or switch power OFF, then ON.
Error point	Error detecting condition
600	The print pressure control sensor does not change from OFF to ON within 3.9 seconds after the print pressure control motor activates to increase pressure during home positioning.
601	The print pressure control sensor does not change from ON to OFF within 4.6 seconds after the print pressure control motor activates to reduce pressure during home positioning.
602	Although the print pressure control pulse motor has completed the operation in sensor stop mode, the logical value of the sensor at the arrival point does not match the design value, or the operation fails to complete in counter stop mode within the specified time.

Error type	T12 [Master disposal section motor lock] (Drum No.1)
Panel display	T12-*** !!System Error!! Press Reset Key If Recovery has Failed, Call Service
Error reset method	Press the Reset key.
Error point	Error detecting condition
300	Overload current detected in master disposal motor. The master disposal motor overcurrent was detected (polling at 10-msec intervals).
301	Master compression motor lock detected. The compression detection switch went ON while lifting the compression plate.
305	The master compression HP sensor does not switch ON within 7.5 seconds after the master compression motor activates to lift the compression plate.
306	The master compression HP sensor does not switch OFF within 2 seconds after the master compression motor activates in the compressing direction.
307	[1] The compression detection does not switch ON within 7.5 seconds after the master compression motor activates in the compressing direction. (Within 5 seconds if moving to the Protect position.) [2] The master compression FG sesnor does not count 20 pulses even after the master compression motor rotated in the compressing direction for 800ms.
309	The FG count value does not change when the master compression motor applies a force to begin the compression, after moving away from the home position sensor. (The master compression motor FG sensor status does not change.)
316	Master disposal motor lock detected. The master disposal motor FG count reduced to half the value from the set speed.

Error type	T13 [Cutter motor lock]
Panel display	T13-*** !!System Error!! Press Reset Key If Recovery has Failed, Call Service
Error reset method	Press the Reset key.
Error point	Error detecting condition
203	The cutter home position switch does not change from ON to OFF within 100 ms after the cutter unit moves from the home position.
204	The cutter home position switch does not switch ON within 300 ms after the cutter begins operating.
205	The master positioning sensor is ON even when the print drum rotates to the specified angle after cutting the master.

Error type	T14 [Flatbed error]
Panel display	T14-*** !!System Error!! Press Reset Key If Recovery has Failed, Call Service
Error reset method	Press the Reset key.
Error point	Error detecting condition
112	The home position sensor does not switch OFF within the set time.
113	The home position sensor does not switch ON within the set time.
114	Faulty parameters sent from the machine to the scanner.
115	The scanner operation fails to complete within the set time.
116	Time-out error generated during black shading (Black compensation fails to complete within the set time.)
117	Time-out error generated during white shading (White compensation fails to complete within the set time.)
123	Time-out error generated during offset adjustment (Offset adjustment fails to complete within the set time.)
124	Time-out error generated during gain adjustment (Gain adjustment fails to complete within the set time.)
125	Offset adjustment processing not completed (Process fails to complete within the set times.)
126	Gain adjustment processing not completed (Process fails to complete within the set times.)
135	Device malfunction during offset adjustment.
136	Device malfunction during gain adjustment.
137	Device malfunction during black shading.
138	Device malfunction during white shading.

Error type	T15 [AF error]
Panel display	T15-*** !!System Error!! Turn Main Power SW OFF Then ON If Recovery has Failed, Call Service
Error reset method	Switch power OFF, then ON.
Error point	Error detecting condition
100	Original IN sensor adjustment error in the AF.
101	AF-EEPROM error.
110	Time-out error generated at the ABC standby position. This error is issued if the original stops at the ABC standby position after the start of AF scanning operation (with ABC), and the original remains electrically charged for the set time. * Error issued from AF.
130	AF command reception time-out error generated in the main printer unit. After a command is sent from the printer to the AF, if no response is transmitted within the set time, the same command is retransmitted. This error is generated if no response is made to this retransmitted command within the set time.
131	The main printer unit received an undefined command from the AF.
132	The main printer unit detected a communication sequence error in the AF unit. * Error issued from AF.
133	AF communication error in the main printer unit (ACK or NAK error).
134	The main printer unit did not transmit a signal to the AF within the set time. After a command is sent from the AF to the printer, if no response is transmitted within the set time, the same command is retransmitted. This error is generated if no response is made to this retransmitted command within the set time.
143	Original width VR value error in the AF.
161	AF unit not connected.

Error type	T17 [Solenoid counter not connected]
Panel display	T17-*** !!System Error!! Press Reset Key If Recovery has Failed, Call Service
Error reset method	Solenoid counter connection signal: ON
Error point	Error detecting condition
020	The solenoid counter is not connected.

Error type	T19 [Thermal pressure motor lock]
Panel display	T19-*** !!System Error!! Press Reset Key If Recovery has Failed, Call Service
Error reset method	Press the Reset key.
Error point	Error detecting condition
207	The TPH pressure sensor does not change from ON to OFF within 2 seconds after the thermal pressure motor operates to reduce pressure (or during home positioning).
208	The TPH pressure sensor does not change from OFF to ON within 2 seconds after the thermal pressure motor operates to reduce pressure.
216	The TPH pressure sensor does not change from ON to OFF within 2 seconds after the thermal pressure motor operates to apply pressure.
217	The TPH pressure sensor does not change from OFF to ON within 2 seconds after the thermal pressure motor operates to apply pressure.

Error type	T20 [Paper ejection section motor lock]
Panel display	T20-*** !!System Error!! Press Reset Key If Recovery has Failed, Call Service
Error reset method	Press the Reset key.
Error point	Error detecting condition
414	The paper ejection wing home position sensor does not change status within the set time after the paper ejection wing pulse motor starts operation.
415	The paper ejection wing home position sensor does not switch OFF within the set time after the paper ejection wing pulse motor operates when the paper ejection wings are at the home position (home position sensor ON).
416	Paper ejection motor overload current detected. The motor overcurrent port switches ON 2 consecutive times after the paper ejection motor switches ON (polling at 10-msec intervals).
437	Paper ejection motor lock detected. The paper ejection motor FG sensor count reduced to half from the set count.
442	Although the paper ejection wing pulse motor has completed the operation in sensor stop mode, the logical value of the sensor at the arrival point does not match the design value, or the operation fails to complete in counter stop mode within the specified time.

Error type	T24 [Inking motor lock] (Drum No.1)
Panel display	T24-*** !!System Error!! Press Reset Key If Recovery has Failed, Call Service
Error reset method	Press the Reset key or switch power OFF, then ON.
Error point	Error detecting condition
539	Inking motor lock detected. The inking motor FG sensor status did not change even after 200msec from the operation of the inking motor.

Error type	T25 [No-battery error]
Panel display	T25-*** !!Low Battery!! Call Service
Error reset method	Replace the battery.
Error point	Error detecting condition
026	No battery power. * Readjust the machine clock after resetting the error.

Error type	T27 [Master-making unit motor lock] (Drum No.1)
Panel display	T27-*** !!System Error!! Press Reset Key If Recovery has Failed, Call Service
Error reset method	Press the Reset key.
Error point	Error detecting condition
248	The master-making unit position sensor does not change status as specified within the set time after the master-making unit begins moving to the standby position.
249	The light path of the master-making unit pull-out position sensor was not blocked within the set time when the master-making unit moved to the pull-out position.
250	The master-making unit position sensor does not change status as specified within the set time after the master-making unit begins moving to the master-making position.
251	Although the master-making unit transport pulse motor has completed the operation in sensor stop mode, the logical value of the sensor at the arrival point does not match the design value. Or the operation fails to complete in counter stop mode within the specified time.
252	The top cover of the master-making unit opened at a location other than the master-making unit pull-out position. (The pressure plate opened when the master-making-unit was moving.)
257	The top cover of the master-making unit opened at a location other than the master-making unit pull-out position. (The master-making-unit tried to move with the pressure plate opened.)

Error type	T29 [Guide release motor lock]
Panel display	T29-*** !!System Error!! Press Reset Key If Recovery has Failed, Call Service
Error reset method	Press the Reset key.
Error point	Error detecting condition
438	The guide roller release home position sensor detects no light within 3.8 seconds after the guide roller begins operating.
439	The light path of the guide roller release home position sensor is not blocked within 3.8 seconds after the guide roller begins operating.
450	Overload current detected in the guide release motor. The guide release motor overcurrent port switches ON 20 consecutive times (polling at 10-msec intervals).

Error type	T31 [Central flap motor lock]
Panel display	T31-*** !!System Error!! Press Reset Key If Recovery has Failed, Call Service
Error reset method	Press the Reset key.
Error point	Error detecting condition
445	The central flap home position sensor detects no light within the set time after the central flap motor begins operating.
446	The light path of the central flap home position sensor is not blocked within the set time after the central flap motor begins operating.
451	Overload current detected in the central flap motor. The central flap motor overcurrent port switches ON 20 consecutive times (polling at 10-msec intervals).

Error type	T41 [Main motor lock] (Drum No.2)
Panel display	T41-*** !!System Error!! Press Reset Key If Recovery has Failed, Call Service
Error reset method	Press the Reset key.
Error point	Error detecting condition
521	The position-B sensor does not change status within 2910 pulses while the main motor is ON.
523	Main motor lock [2] detected by DPS.
537	The position-B stop operation failed.
538	The print drum is not locked during print drum operation.

Error type	T43 [Clamp motor lock] (Drum No.2)
Panel display	T43-*** !!System Error!! Press Reset Key If Recovery has Failed, Call Service
Error reset method	Press the Reset key.
Error point	Error detecting condition
500	The Second clamp sensor is OFF after the clamp unit initializes and completes home position operation.
501	The Second clamp sensor does not change status within 1 second after the clamp motor begins rotating in the forward direction.
502	The Second clamp sensor does not change status within 1 second after the clamp motor begins rotating in the reverse direction.
504	The logical values of the Second clamp sensor does not match at the start of the clamp releasing operation.
506	The value of the Second clamp sensor does not match with the logical values at the start of the clamp unit home positioning operation.
514	The print drum is not at the horizontal home position while the clamp unit is operating.
545	The clamp unit is not at the specified position when the print drum begins rotating.
546	The clamp unit is not at the home position when the print drum initiates horizontal movement.
547	The clamp unit is not at the home position when the master-making unit begins its motion.

Error type	T44 [Ink overflow] (Drum No.2)
Panel display	T44-*** !!System Error!! Press Reset Key If Recovery has Failed, Call Service
Error reset method	With the overflow sensor switched OFF, press the Reset key.
Error point	Error detecting condition
513	The overflow sensor switches ON successively for the set number of times during the 10-ms-interval check.

Error type	T46 [Horizontal pulse motor lock] (Drum No.2)
Panel display	T46-*** !!System Error!! Press Reset Key If Recovery has Failed, Call Service
Error reset method	Press the Reset key or switch power OFF, then ON.
Error point	Error detecting condition
607	The horizontal home position sensor detects no light within xx seconds after the horizontal home positioning operation initiates movement toward the right during drive releasing operation.
608	The light path of the horizontal home position sensor is not blocked within xx seconds after the horizontal home positioning operation initiates movement toward the left during drive connecting operation.
609	Although the horizontal pulse motor has completed the operation in sensor stop mode, the logical value of the sensor at the arrival point does not match the design value, or the operation fails to complete in counter stop mode within the specified time.
627	The light path of the drive release home position sensor is not blocked during drive connecting operation.
628	The drive release home position sensor detects no light during drive releasing operation.

Error type	T51 [Print pressure control pulse motor lock] (Drum No.2)
Panel display	T51-*** !!System Error!! Press Reset Key If Recovery has Failed, Call Service
Error reset method	Press the Reset key or switch power OFF, then ON.
Error point	Error detecting condition
600	The print pressure control sensor does not change from OFF to ON within 3.9 seconds after the print pressure control pulse motor activates to increase pressure during home positioning.
601	The print pressure control sensor does not change from ON to OFF within 4.6 seconds after the print pressure control pulse motor activates to reduce pressure during home positioning.
602	Although the print pressure control pulse motor has completed the operation in sensor stop mode, the logical value of the sensor at the arrival point does not match the design value, or the operation fails to complete in counter stop mode within the specified time.

Error type	T52 [Master disposal section motor lock] (Drum No.2)
Panel display	T52-*** !!System Error!! Press Reset Key If Recovery has Failed, Call Service
Error reset method	Press the Reset key.
Error point	Error detecting condition
300	Overload current detected in master disposal motor. The master disposal motor overcurrent was detected (polling at 10-msec intervals).
301	Master compression motor lock detected. The compression detection switch went ON while lifting the compression plate.
305	The master compression HP sensor does not switch ON within 7.5 seconds after the master compression motor activates to lift the compression plate.
306	The master compression HP sensor does not switch OFF within 2 seconds after the master compression motor activates in the compressing direction.
307	[1] The compression detection does not switch ON within 7.5 seconds after the master compression motor activates in the compressing direction. (Within 5 seconds if moving to the Protect position.). [2] The master compression FG sensor does not count 20 pulses even after the master compression motor rotated in the compressing direction for 800ms.
309	The FG count value does not change when the master compression motor applies a force to begin the compression, after moving away from the home position sensor. (The master compression motor FG sensor status does not change.)
316	Master disposal motor lock detected. The master disposal motor FG count reduced to half the value from the set speed.

Error type	T64 [Inking motor lock] (Drum No.2)
Panel display	T64-*** !!System Error!! Press Reset Key If Recovery has Failed, Call Service
Error reset method	Press the Reset key or switch power OFF, then ON.
Error point	Error detecting condition
539	Inking motor lock detected. The inking motor FG sensor does not change status within 20 ms after the inking motor switches ON.

Error type	T67 [Master-making unit motor lock] (Drum No.2)
Panel display	T67-*** !!System Error!! Press Reset Key If Recovery has Failed, Call Service
Error reset method	Press the Reset key.
Error point	Error detecting condition
248	The master-making unit position sensor does not change status as specified within the set time after the master-making unit begins moving to the standby position.
250	The master-making unit position sensor does not change status as specified within the set time after the master-making unit begins moving to the master-making position.

Error type	T91 [Panel EEPROM error]
Panel display	T91-*** !!System Error!! Press Reset Key If Recovery has Failed, Call Service
Error reset method	Press the Reset key.
Error point	Error detecting condition
013	The date information data is incorrect
968	Read error generated in the panel EEPROM.
969	Write error generated in the panel EEPROM.
976	Checksum error generated in the panel EEPROM.
977	Verification error generated in the panel EEPROM.

Error type	T92 [Print drum EEPROM write error]
Panel display	T92-*** !!System Error!! Press Reset Key If Recovery has Failed, Call Service
Error reset method	Press the Reset key.
Error point	Error detecting condition
570	The print drum EEPROM is being accessed while the print drum is performing a releasing action.

Error type	T93 [NET-D hardware error]
Panel display	T93-*** !!System Error!! Turn Main Power SW OFF Then ON If Recovery has Failed, Call Service
Error reset method	Switch power OFF, then ON.
Error point	Error detecting condition
932	No response from the NIC when NIC is accessed.

Error type	T94 [Call service error: TPH]
Panel display	T94-*** !!System Error!! Turn Main Power SW OFF Then ON If Recovery has Failed, Call Service
Error reset method	Switch power OFF, then ON.
Error point	Error detecting condition
225	The TPH code does not correspond to the machine model code when the power is switched ON (only when the master-making unit is in the operating position) or when the master-making unit is inserted in the operating position.

Error type	T95 [FRAM error]
Panel display	T95-*** !!System Error!! Turn Main Power SW OFF Then ON If Recovery has Failed, Call Service
Error reset method	Switch power OFF, then ON.
Error point	Error detecting condition
059	The machine serial number information sent from the SH-PCB does not correspond to the machine serial number information in the mechanical control PCB.

Error type	T96 [Data not input]
Panel display	T96-*** !!System Error!! Turn Main Power SW OFF Then ON If Recovery has Failed, Call Service
Error reset method	Enter parameters in Test Mode.
Error point	Error detecting condition
171	TPH resistance not set.
172	Scanner adjustment not completed.
433	Paper width potentiometer (VR) not set.
569	Print drum color or ink category not set.
613	Print pressure compensation not set.
972	REv data storage area not initialized.

Error type	T97 [PC card access error]
Panel display	T97-*** !!System Error!! Press Reset Key If Recovery has Failed, Call Service
Error reset method	Press the Reset key.
Error point	Error detecting condition
939	PC card access error: PC card not set.
940	PC card access error: Device information multiple-ID error (PCMCIA card information error).
941	PC card access error: Device error (incompatible CF card error).
942	PC card access error: File creation failed (File with the same name already exists).
943	PC card access error: Unformatted.
944	PC card access error: Media ID error.
945	PC card access error: Media error (CF card cannot be accessed).
946	PC card access error: Insufficient disc capacity (Not enough space available on the CF card to write data).
990	PC card access error: Specified file not found on the selected drive.
991	PC card access error: The file accessed is not currently open.
992	PC card access error: File information storage folder already in use.
993	PC card access error: Incorrect read address setting for data transfer to mechanical unit.
994	PC card access error: File deletion failed.

Error type	T98 [Hardware error]
Panel display	T98-*** !!System Error!! Turn Main Power SW OFF Then ON If Recovery has Failed, Call Service
Error reset method	Switch power OFF, then ON.
Error point	Error detecting condition
005	Hardware error (Machine model code error).
006	FRAM checksum error.
025	Faulty tag RF PCB (initial communication with the tag RF PCB failed).
034	Unable to write data to the main unit EEPROM (EEPROM cannot be accessed).
035	CRC error generated in the main unit EEPROM (EEPROM data error).
038	The machine model information for the PCB and the EEPROM fail to match.
039	Incorrect EEPROM.
051	Communication error with touch-panel controller.
053	Unsuccessful attempt to read memory parameters (program, mode, user paper).
054	Unsuccessful attempt to write memory parameters (program, mode, user paper).
055	The machine model code sent from the SH-PCB does not correspond to the machine model information in the mechanical control PCB.
063	The test mode parameter setting data in the memory is out of selectable range.
064	Communication between SH PCB and mechanical control PCB: Undefined command was issued.
065	Communication error between SH PCB and mechanical control PCB (01) (on mechanical control PCB side): Incorrect number of bytes in received command.
067	Communication error between SH PCB and mechanical control PCB (03) (on mechanical control PCB side): RNK received.
068	Communication error between SH PCB and mechanical control PCB (04) (on mechanical control PCB side): NAK received 3 times.
069	Communication error between SH PCB and mechanical control PCB (05) (on mechanical control PCB side): No ACK response.
070	Communication error between SH PCB and mechanical control PCB (06) (on mechanical control PCB side): Transmission prevented by SH PCB.
071	Communication error between SH PCB and mechanical control PCB (07) (on mechanical control PCB side): Command received while awaiting response.
072	Communication error between SH PCB and mechanical control PCB (08) (on mechanical control PCB side): FB command received in mode other than download mode.
073	Communication error between SH PCB and mechanical control PCB (09) (on mechanical control PCB side): FC/FD command received in mode other than download mode.
074	Communication error between SH PCB and mechanical control PCB (10) (on SH PCB side): FE command received (No mechanical control PCB program).
075	Communication error between SH PCB and mechanical control PCB (11) (on SH PCB side): Incorrect number of bytes in received command.
076	Communication error between SH PCB and mechanical control PCB (12) (on SH PCB side): Received ACK not specified in sequence.
077	Communication error between SH PCB and mechanical control PCB (13) (on SH PCB side): RNK received.
078	Communication error between SH PCB and mechanical control PCB (14) (on SH PCB side): NAK received 3 times.
079	Communication error between SH PCB and mechanical control PCB (15) (on SH PCB side): No ACK response.
080	Communication error between SH PCB and mechanical control PCB (16) (on SH PCB side): Transmission prevented by the mechanical control PCB (CTS = 1).

Error type	T98 [Hardware error]
Panel display	T98-*** !!System Error!! Turn Main Power SW OFF Then ON If Recovery has Failed, Call Service
Error reset method	Switch power OFF, then ON.
Error point	Error detecting condition
081	Communication error between SH PCB and mechanical control PCB (17) (on SH PCB side): Mechanical control download mode was transmitted by error.
082	Communication error between SH PCB and mechanical control PCB (18) (on SH PCB side): Mechanical CTS remained at <1> for 2 seconds.
083	Communication error between SH PCB and mechanical control PCB (19) (on SH PCB side): FA command received at time other than startup.
084	Communication error between SH PCB and mechanical control PCB (20) (on SH PCB side): <80> command not received within 10 seconds after power ON.
094	Communication sequence error between SH PCB and mechanical control PCB.
097	The Test Mode adjustment value set in the print drum memory lies outside the adjustment range.
098	The machine serial number information in the main unit EEPROM does not correspond to the machine serial number information in the FRAM.
099	SH4F PCB: Undefined interrupt processing was generated.
119	Faulty image PCB (Memory check of the image processing IC failed). (Image processing IC check timing: during initialization)
120	Time-out error generated while awaiting scanner serial communication interrupt command (The CPU failed to receive interrupt command from FORCE device within 100 ms). Scanner serial communication timing: Transmission of data to AK8412 (A/D converter). Transmission of data to scanner gate array. Reading of data from scanner gate array. Reading of TPH thermister A/D converter data.
129	Faulty scanner gate array PCB (Error generated in the memory check of the scanner gate array).
245	Time-out error (action other than sensor standard) for the write pulse motor during master transport in master-making operation.
246	Time-out error (action other than sensor standard) for the load pulse motor during master transport in master-making operation.
422	The DA setting for adjustment of the light-emitting section reached the upper-limit value during automatic multiple paper feed adjustment in Test Mode No. 705.
423	The DA setting for adjustment of the light-emitting section reached the lower-limit value during automatic multiple paper feed sensor adjustment in Test Mode No. 705.
448	The DA setting for adjustment of the light-emitting section reached the upper-limit value during automatic registration sensor adjustment in Test Mode No. 709.
449	The DA setting for adjustment of the light-emitting section reached the lower-limit value during automatic registration sensor adjustment in Test Mode No. 709.
453	Timeout during multiple feed sensor automatic sensitivity adjustment. (Error displays when the adjustment is made without paper.)

Error type	T98 [Hardware error]
Panel display	T98-*** !!System Error!! Turn Main Power SW OFF Then ON If Recovery has Failed, Call Service
Error reset method	Switch power OFF, then ON.
Error point	Error detecting condition
454	Timeout during registration sensor automatic sensitivity adjustment. (Error displays when the adjustment is made without paper.)
921	Faulty USB controller chip. (USB connection between the machine and PC).
922	SH4F PCB system lock (image communication error).
934	Communication error between mechanical control PCB and tag RF PCB (detection on tag RF PCB side).
935	Communication error between mechanical control PCB and tag RF PCB (detection on mechanical control PCB side).
937	Serial number not set.
938	FRAM version down.
947	24V-A does not switch ON (possibility of blown 24V-A fuse).
948	24V-B does not switch ON (possibility of blown 24V-B fuse).
949	24V-A does not switch OFF.
950	24V-B does not switch OFF.
952	Checksum error in SH4F PCB flash memory.
953	Error generated during attempt to write data to SH4F PCB flash memory.
960	Error generated during attempt to read data from SH4F PCB flash memory.
961	SH4F PCB flash memory not in use.
978	Illegal power ON command received from the mechanical control PCB at a time other than boot up or wake-up.
979	Abnormal setting value in SH4F PCB flash memory properties.
983	24V-C does not go OFF when the machine reboots from the stand-by mode.
984	24V-C does not go OFF when the machine goes into low-power mode.
986	The software for the mechanical control PCB does not match the DSP (main, second) software. Download the DSP software version suitable for the software for the mechanical control PCB.
987	Communication error between DSP and mechanical control PCB.
988	The second paper feed motor parameter and the main motor parameter are <00h>. Main motor parameter acquisition mode and second paper feed motor parameter acquisition mode in Test Mode have not been executed.
996	Faulty RF-PCB on the master making unit.

Error type	T99 [Software error]
Panel display	T99-*** !!System Error!! Turn Main Power SW OFF Then ON If Recovery has Failed, Call Service
Error reset method	Switch power OFF, then ON.
Error point	Error detecting condition
982	The program loader on the Mechanical Control PCB is for another machine model.

2-1 Jam errors (A**)

Error type	A01 [Master feed error]
Panel display	A01-*** Master Mis-Feed Pull Out Master Making Unit and Rewind Master Roll, then Reset Master in Place.
Error reset method	Master-making unit sensor: OFF -> ON and Master positioning sensor: OFF << Reset the master to cancel the error. >> (Or switch power OFF, then ON.)
Error point	Error detecting condition
201	During master settings, cutting, or making, the master positioning sensor does not switch ON, even after the master is sent.
202	During master setting or at the start of the master-making operation, the master positioning sensor does not switch OFF, even when the master is rewound for the set time.
211	The master positioning sensor is ON during standby.
214	The master positioning sensor is ON at the start of the master-making operation.
215	Although the write pulse motor has completed the operation in sensor stop mode, the logical value of the sensor at the arrival point does not match the design value, or the operation fails to complete in counter stop mode within the specified time (faulty gate array control).

Error type	A02 [Master loading error] (Drum No.1)
Panel display	A02-*** Master Loading Error Pull Out Print Cylinder 1 and Discard Master
Error reset method	First print drum connection signal: ON -> OFF and first print drum safety SW: ON -> OFF << Pull out the print drum to cancel the error. >> * If the print drum is at position B when this error occurs, the print drum lock is automatically released.
Error point	Error detecting condition
509	The master loading sensor was OFF when the presence of master was checked at the specified angle during master-loading operation.

Error type	A04 [Master removal error] (Drum No.1)
Panel display	A04-*** Master Disposal Error Pull Out Print Cylinder 1 and Discard Master
Error reset method	First print drum connection signal: ON -> OFF and first print drum safety SW: ON -> OFF << Pull out the print drum to cancel the error. >> * If the print drum is at position B when this error occurs, the print drum lock is automatically released.
Error point	Error detecting condition
303	Print drum check request when the master removal error or removed master jam detected.

Error type	A05 [Master present in master removal section] (Drum No.1)
Panel display	A05-*** Master Jammed in Disposal Unit Pull Out Master Disposal Box 1 and Remove Jammed Master
Error reset method	First master disposal box safety SW: OFF and first master disposal jam sensor: OFF << When the master disposal box is pulled out, the error is cancelled if the master has been removed. >> (Or switch power OFF, then ON.)
Error point	Error detecting condition
304	Master disposal box check request when Master removal error or removed master jam detected.
312	The master disposal jam sensor was ON at the start of the master-making operation.
315	The master disposal jam sensor was ON at the completion of the recovery operation.

Error type	A06 [Paper feed tray check]
Panel display	A06-*** Safety SW on Standard Feed Tray is Activated Reset paper on Standard Feed Tray
Error reset method	Paper feed tray upper safety SW: ON or Paper feed tray lower safety SW: ON (Or switch power OFF, then ON.)
Error point	Error detecting condition
403	The paper feed tray safety switch is OFF.

Error type	A16 [Awaiting removal of master] (Drum No.1)
Panel display	A16-*** Master Remains on Print Cylinder 1 Pull Out Print Cylinder 1 and Remove Master
Error reset method	First print drum connection signal: ON -> OFF and first print drum safety SW: ON -> OFF << Pull out the print drum to cancel the error. >> * If the print drum is at position B when this error occurs, the print drum lock is automatically released.
Error point	Error detecting condition
525	Waiting for master to be removed.

Error type	A17 [Cutter error]
Panel display	A17-*** System Error in Master Making Unit Take Out Master and then Close Master Making Unit Cover
Error reset method	Master-making unit sensor: OFF -> ON and Master detection sensor: OFF << When the master making unit cover is closed without a master, the error is cancelled. >>
Error point	Error detecting condition
209	The cutter home position switch is OFF when the machine enters standby, at the start of the master-making operation, or when the master material is set.

Error type	A34 [Awaiting master reset]
Panel display	A34-*** Master Not Set in Place Insert Lead Edge of Master into Master Entrance and Close Master Making Unit
Error reset method	Master-making unit sensor: OFF -> ON and Master positioning sensor: OFF << When the master material is re-inserted, the error is cancelled. >>
Error point	Error detecting condition
218	Requesting the reset of master material.

Error type	A42 [Master loading error] (Drum No. 2)
Panel display	A42-*** Master Loading Error Pull Out Print Cylinder 2 and Discard Master
Error reset method	Second print drum connection signal: ON -> OFF and second print drum safety SW: ON -> OFF << Pull out the print drum to cancel the error. >> * If the print drum is at position B when this error occurs, the print drum lock is automatically released.
Error point	Error detecting condition
509	The master loading sensor was OFF when the presence of master was checked at the specified angle during master-loading operation.

Error type	A44 [Master removal error] (Drum No. 2)
Panel display	A44-*** Master Disposal Error Pull Out Print Cylinder 2 and Discard Master
Error reset method	Second print drum connection signal: ON -> OFF and second print drum safety SW: ON -> OFF << Pull out the print drum to cancel the error. >> * If the print drum is at position B when this error occurs, the print drum lock is automatically released.
Error point	Error detecting condition
303	Print drum check request when the master removal error or removed master jam detected.

Error type	A45 [Master present in master removal section] (Drum No. 2)
Panel display	A45-*** Master Jammed in Disposal Unit Pull Out Master Disposal Box 2 and Remove Jammed Master
Error reset method	Second master disposal box safety SW: OFF and second master disposal jam sensor: OFF << When the master disposal box is pulled out, if the master has been removed, the error is cancelled. >> (Or switch power OFF, then ON.)
Error point	Error detecting condition
304	Master disposal box check request when Master removal error or removed master jam detected.
312	The master disposal jam sensor was ON at the start of the master-making operation.
315	The master disposal jam sensor was ON at the completion of the recovery operation.

Error type	A56 [Awaiting removal of master] (Drum No. 2)
Panel display	A56-*** Master Remains on Print Cylinder 2 Pull Out Print Cylinder 2 and Remove Master
Error reset method	Second print drum connection signal: ON -> OFF and second print drum safety SW: ON -> OFF << Pull out the print drum to cancel the error. >> * If the print drum is at position B when this error occurs, the print drum lock is automatically released.
Error point	Error detecting condition
525	Waiting for the master to be removed.

2-2 Jam errors (A: Indicates the detail of J-type error)**

Error type	A07 [Paper feed error]
Error point	Error detecting condition
409	The central transport sensor was OFF when the paper reached the central transport sensor, and the paper feed sensor was ON when the operation stopped (paper feed error).
412	The paper feed sensor switched OFF consecutively for n number of times at the time of the initial paper feed jam detection (no-paper feed error).
413	The paper feed sensor was ON when the paper left the paper feed sensor (extra-long paper error). Or the fuse for the Second paper feed motor is burnt.
418	The paper feed sensor was ON at the start of the operation.
443	The registration sensor was OFF at the time the paper reached the registration sensor.
444	The registration sensor was ON although there was no paper.

Error type	A08 [Paper jam] (Drum No. 1)
Error point	Error detecting condition
410	The central transport sensor was OFF at the timing when the paper should have arrived at the central transport sensor, and the Paper sensor was OFF when the machine stopped. (Either a paper jammed on the drum or the fuse for the Second paper feed motor is burnt).

Error type	A09 [Paper ejection error]
Error point	Error detecting condition
411	The paper ejection sensor was ON when the paper left the paper ejection sensor. Or the fuse for the Second paper feed motor is burnt.
417	The paper ejection sensor was ON at the start of the operation.

Error type	A10 [AF original feed error]
Error point	Error detecting condition
102	Original jam error resulting from pulled-out original. The original IN sensor switched OFF while the original registration sensor and the original IN sensor were ON during scanning. The original ejection sensor switched OFF before completion of scanning (prior to SIG_C output). The original registration sensor switched OFF from the time of completion of leading edge insertion operation to the time of scanning start. * Issued by AF.
103	Original jam at the AF registration sensor (extra-long paper error). The original registration sensor fails to switch OFF after the original IN sensor switched ON (max: movement of 486 mm). * Issued by AF.
105	Original jam at the original IN sensor The original IN sensor fails to switch OFF after the original registration sensor switched OFF (max: movement of 84 mm). * Issued by AF.
106	Original jam at the original OUT sensor The original OUT sensor fails to switch OFF after the original IN sensor switched OFF (max: movement of 86 mm). * Issued by AF.
107	Original registration sensor non-arrival jam Original fails to reach the original registration sensor after the feed operation started (max.: movement of 103 mm). * Issued by AF.
108	Original IN sensor non-arrival jam Original fails to reach the original IN sensor after the scanning operation started (max.: movement of 42 mm). * Issued by AF.
109	Original OUT sensor non-arrival jam Original fails to reach the original OUT sensor after the original IN sensor switched ON (max.: movement of 86 mm). * Issued by AF.
169	Original jammed in the AF unit due to the reason that the AF unit was opened during the operation.
178	Original flipper sensor non-arrival jam Original fails to reach the Original flipper sensor after the original was fed.
179	Original jam at the original flipper sensor. Original flipper sensor fails to switch OFF after the original was detected by the Original flipper sensor.
180	Gap between the originals not constant.

Error type	A25 [Central transport error]
Error point	Error detecting condition
419	The central transport sensor was ON at the start of the operation.
441	The central transport sensor was ON at the timing the paper should have left the central transport sensor (central transport error).
447	The paper ejection sensor did not detect the paper at the timing when the paper should have arrived, and when the machine stops, the central transport sensor was ON (central transport error).
455	Central transport error (during the recovery movement).

Error type	A48 [Paper jam] (Drum No. 2)
Error point	Error detecting condition
410	The paper ejection sensor was OFF at the timing when the paper should have arrived to the sensor and when the machine stopped, the central transport sensor was OFF. (Paper jammed on Drum No.2)

3. Option errors (B**)

Error type	B01 [Card counter: No card]
Panel display	B01-*** Insert Card in Key/Card Counter
Error reset method	Insert the card.
Error point	Error detecting condition
730	Card counter: No card

Error type	B21 [Storage memory: Read/write error]
Panel display	B21-*** !!System Error!! Turn Main Power SW OFF Then ON If Recovery has Failed, Call Service
Error reset method	Switch power OFF, then ON.
Error point	Error detecting condition
715	Storage memory access error.

Error type	B22 [Job separator: Power OFF]
Panel display	B22-*** !! Job Separator is OFF !! Turn On Power Switch of it
Error reset method	Press the Reset key. (Confirm that the job separator is switched ON.)
Error point	Error detecting condition
721	With the tape separation setting switched ON, the job separator is in a Power OFF state when the Start key is pressed.
727	The BUSY signal remains at <L> (power is switched OFF during job separator tape output) for more than 7 seconds after the cluster-A signal switches ON.

Error type	B23 [Job separator: No-tape error]
Panel display	B23-*** No Paper Tape in Job Separator Replace Tape Roll
Error reset method	Press the Reset key. (Confirm that the job separator is switched ON.)
Error point	Error detecting condition
722	With the BUSY signal at <H> (Power ON) and the tape separation setting switched ON, the tape detection signal is at <H> (no tape) when the Start key is pressed.
723	The tape detection signal is at <H> (no tape) after the tape output command is issued, and the BUSY signal changed from <L> to <H> (after completion of operation).

Error type	B24 [Job separator: Jam error]
Panel display	B24-*** Paper Tape Jam in Job Separator Remove Paper Tape
Error reset method	Press the Reset key. (Confirm that the job separator jam is reset.)
Error point	Error detecting condition
724	With the BUSY signal at <H> (Power ON) and the tape separation setting switched ON, the tape detection signal is at <L> (tape remaining) when the Start key is pressed.
725	The tape jam detection signal remains at <H> for more than 1.2 seconds after cluster-A signal switched ON (tape transport error).
726	The tape jam detection signal was at <L> when the BUSY signal changed from <L> to <H> or it remains at <L> for more than 7 seconds after the cluster-A signal switched ON (tape ejection error).

Error type	B31 [Network cable not connected]
Panel display	B31-*** !! No Linked Printer Detected !! Check Cable Connection and Power Supply for Linked Printer
Error reset method	Press the Reset key.
Error point	Error detecting condition
916	The network cable was not connected when the machine starts up.
920	Error detected by NET-D (NAK received). * No response from communication destination, interruption by communication destination, TCP/IP not operating in the NET-D, unauthorized interrupt received from the main unit, etc.

Error type	B32 [NIC: External communication error]
Panel display	B32-*** !! No Linked Printer Detected !! Check Cable Connection and Power Supply for Linked Printer
Error reset method	Press the Reset key. << Remove the cause of the error in the printer to cancel the error. >>
Error point	Error detecting condition
914	MIB information request error. * Transmission not possible after waiting 3 seconds (WAK), no response from communication destination, interruption by communication destination, TCP/IP not operating in the NET-D, unauthorized interrupt received from the main unit, etc.
915	No MIB information returned. * No response from the NET-D (communication destination) for 50 seconds (error detected in main unit).
917	Network communication error.

Error type	B33 [IP address setup error]
Panel display	B33-*** No IP Address Assigned to This Printer Contact Your Network Administrator
Error reset method	Press the Reset key.
Error point	Error detecting condition
931	The DHCP is ON, but the DHCP server cannot be found.

Error type	B34 [RLP: No-toner error]
Panel display	B34-*** No Toner in Linked Printer
Error reset method	Press the Reset key.
Error point	Error detecting condition
919	No toner in the linked printer.

Error type	B35 [RLP: Service error]
Panel display	B35-*** Linked Printer in Error
Error reset method	Press the Reset key.
Error point	Error detecting condition
970	Service error in the linked printer.

4. Consumables error (C**)

Error type	C01 [Ink cartridge replacement] (Drum No. 1)
Panel display	C01-*** No Ink in Print Cylinder 1 Replace Ink Cartridge
Error reset method	First ink cartridge set SW: OFF -> ON << Install a new ink cartridge to cancel the error. >> Or first print drum safety SW: OFF, first print drum connection signal: OFF, and first print drum lock sensor: OFF << Pull out the print drum to cancel the error. >>
Error point	Error detecting condition
512	The ink sensor does not switch ON when the inking operation is conducted for the set time (inkless).
563	The remaining volume information in the ink tag reached the default value.
574	Inkless error was generated 5 times for the same ink cartridge.

Error type	C02 [Master roll replacement]
Panel display	C02-*** No Master Replace Master Roll
Error reset method	Master-making unit sensor: OFF -> ON << Open and close the master-making unit to cancel the error. >>
Error point	Error detecting condition
200	The 10-ms-interval master end check detected 2 consecutive times during the master transport.
240	The remaining volume information in the master tag reached the maximum value.
253	[No-master] error was generated twice for the same master.

Error type	C03 [Master disposal box full (Drum No. 1)
Panel display	C03-*** Master Disposal Box 1 is Full Empty Master Disposal Box
Error reset method	Switch OFF the first master disposal box sensor OFF, then turn ON after waiting at least 5 seconds.
Error point	Error detecting condition
308	After the master compression motor activates in the compressing direction, the compression detection switches ON before the FG count exceeds the specified volume.

Error type	C04 [No-paper error]
Panel display	C04-*** Add Paper
Error reset method	The paper detection sensor is ON.
Error point	Error detecting condition
402	The paper detection sensor is OFF.

Error type	C05 [Both master disposal boxes full]
Panel display	C05-*** Master Disposal Box 1 and 2 are Full Empty Both Master Disposal Boxes
Error reset method	Switch OFF the first master disposal box sensor, then switch it back ON after waiting at least 5 seconds. Switch OFF the second master disposal box sensor, then switch ON after waiting at least 5 seconds.
Error point	Error detecting condition
317	After the master compression motor on the first print drum side or second print drum side begins to apply a compression force, the compression detection activates and the other disposal box exceeds 90% capacity before the FG count exceeds the specified volume (Expected disposal box full).

Error type	C41 [Ink cartridge replacement] (Drum No. 1)
Panel display	C41-*** No Ink in Print Cylinder 2 Replace Ink Cartridge
Error reset method	Second ink cartridge set SW: OFF -> ON << Install a new ink cartridge to cancel the error. >> Or second print drum safety SW: OFF, second print drum connection signal: OFF, and second print drum lock sensor: OFF << Pull out the print drum to cancel the error. >>
Error point	Error detecting condition
512	The ink sensor does not turn ON when inking is performed for the set time (inkless).
563	The remaining volume information in the ink tag reached the maximum value.
574	An inkless error was generated 5 consecutive times for the same ink cartridge.

Error type	C43 [Master disposal box full] (Drum No. 2)
Panel display	C43-*** Master Disposal Box 2 is Full Empty Master Disposal Box
Error reset method	Switch OFF the second master disposal box sensor, then switch back ON after waiting at least 5 seconds.
Error point	Error detecting condition
308	After the master compression motor begins to apply a compressive force, the compression detection switched ON before the FG count exceeds the specified volume.

5. Set check errors (D**)

Error type	D01 [Print drum not installed] (Drum No. 1)
Panel display	D01-*** Set Print Cylinder in Place
Error reset method	First print drum safety SW: ON, first print drum connection signal: ON, and first print drum lock sensor: ON << Install the print drum to clear the error. >>
Error point	Error detecting condition
526	The print drum is removed. (The connection signal, safety SW, and lock sensor are OFF.)
527	The print drum connection signal is OFF after the print drum is installed.
528	The print drum safety switch is OFF after the print drum is installed.
529	The print drum lock sensor is OFF after the print drum is installed (time-out during insertion: 5
530	The print drum connection signal does not switch OFF within 5 seconds after the print drum safety switch switches OFF when the print drum is removed.
581	The drum safety switch turned OFF during machine operation.

Error type	D02 [Print drum incompatibility] (Drum No. 1)
Panel display	D02-*** Wrong-Type Print Cylinder Installed in Cylinder Position 1 Replace with Correct Type
Error reset method	Replace with the correct print drum. (The print drum code must match the machine model.)
Error point	Error detecting condition
532	The print drum is incompatible. (Drum code not correct)
580	The print drum is incompatible. (Drum style not correct)

Error type	D03 [Ink cartridge not installed] (Drum No. 1)
Panel display	D03-*** Install Ink Cartridge in Print Cylinder 1
Error reset method	First ink cartridge set SW: ON
Error point	Error detecting condition
533	The ink cartridge set switch is OFF.

Error type	D04 [Ink cartridge incompatibility] (Drum No. 1)
Panel display	D04-*** Wrong-type Ink Cartridge Installed in Cylinder 1 or Cannot Read Ink Info Replace Ink Cartridge or Contact Dealer/Riso Office
Error reset method	Replace with a correct ink cartridge.
Error point	Error detecting condition
534	The ink cartridge is incompatible.
560	Error due to missing ink cartridge tag.
561	Ink tag communication error (tag communication error due to noise).
562	Abnormal ink tag information. Checksum error, verification error, storage of master information, etc.
564	Serial number mismatch detected during the periodic ink tag serial number check.
575	Software error involving ink tag. Antenna CH selection error, erroneous writing of data to write-protected area.

Error type	D05 [Master not installed]
Panel display	D05-*** Set Master in Place
Error reset method	Master-making unit sensor: OFF << Open the master-making unit to clear the error. >>
Error point	Error detecting condition
210	The master detection sensor is OFF.

Error type	D07 [Master disposal box not installed] (Drum No. 1)
Panel display	D07-*** Set Master Disposal Box 1 in Place
Error reset method	First master disposal box safety SW: ON << Install the master disposal box to clear the error. >>
Error point	Error detecting condition
310	The master disposal box safety switch is OFF.

Error type	D08 [Master-making unit not installed]
Panel display	D08-*** Set Master Making Unit in Place
Error reset method	With the master-making unit removed, the second master-loading sensor or the master-making unit pull-out position sensor is ON, and the cover safety SW is OFF. << Install the master-making unit into the main unit to clear the error. >>
Error point	Error detecting condition
224	The master-making unit is in the pulled-out condition (safety switch, lock sensor OFF).

Error type	D09 [Master-making unit cover not closed]
Panel display	D09-*** Close Master Making Unit Cover
Error reset method	Master-making unit sensor: ON << Close the master-making unit to clear the error. >>
Error point	Error detecting condition
212	The master-making unit Top cover set sensor is OFF.

Error type	D11 [Front cover not closed]
Panel display	D11-*** Close Front Cover
Error reset method	Front cover safety SW: ON
Error point	Error detecting condition
535	The front cover safety switch is OFF.

Error type	D13 [Machine rear cover not closed]
Panel display	D13-*** Rear Cover of Main Body is Off Call Service
Error reset method	Rear cover safety SW: ON
Error point	Error detecting condition
009	The rear cover of the main unit is not closed. (The rear cover safety switch is OFF.)

Error type	D17 [Master incompatibility]
Panel display	D17-*** Wrong-type Master Installed or Cannot Read Master Info Replace Master Roll or Contact dealer/Riso office
Error reset method	Master-making unit safety SW: ON -> OFF and Master-making unit lock sensor: ON -> OFF << Pull out the master-making unit to clear the error. >>
Error point	Error detecting condition
236	The master is incompatible.
237	Error due to missing master tag.
238	Master tag communication error (tag communication error due to noise).
239	Abnormal master tag information. Checksum error, verification error, storage of ink information, etc.
241	Serial number mismatch detected during the periodic master tag serial number check.
256	Software error involving master tag. Antenna CH selection error, erroneous writing of data to write-protected area.

Error type	D18 [Print drum ready to pull-out] (Drum No. 1)
Panel display	D18-*** Print Cylinder 1 has been Unlocked
Error reset method	First print drum connection signal: ON -> OFF and first print drum safety SW: ON -> OFF << Pull out the print drum to clear the error. >> Or Front cover set SW: ON << Close the front cover to clear the error. >> Or master-making unit release button: ON << Press the master-making unit release button to clear the error. >>
Error point	Error detecting condition
522	The print drum is in the pull-out position. (The print drum lock solenoid is ON.)

Error type	D19 [Master-making unit ready to pull out]
Panel display	D19-*** Master Making Unit has been Unlocked
Error reset method	Second master-loading sensor: OFF; Master-making unit pull-out position sensor: OFF; and Cover safety SW: OFF Or master-making unit drawer cover safety SW: OFF -> ON
Error point	Error detecting condition
223	The master-making unit is in the pull-out position (The master making unit lock solenoid ON).

Error type	D20 [Master-making unit drawer cover not closed]
Panel display	D20-*** Close Master Making Unit Access Cover
Error reset method	Master-making unit drawer cover safety SW: OFF -> ON
Error point	Error detecting condition
254	The master-making unit drawer cover is not in position. (Master-making unit removed (second master-loading position sensor: ON or master-making unit pull-out position sensor: ON) and cover safety SW: OFF)

Error type	D21 [Master-making unit drawer cover ready to open]
Panel display	D21-*** Ready to Open Master Making Unit Access Cover
Error reset method	Master-making unit drawer cover safety SW: ON -> OFF Or Pull-out position sensor: ON -> OFF
Error point	Error detecting condition
255	The master-making unit drawer cover ready to open. (Master-making unit pull-out position sensor: ON and Cover safety SW: ON)

Error type	D22 [Print drum pull-out command] (Drum No. 1)
Panel display	D22-*** Print Cylinder 1 is not Set in Place Press Cylinder Release Button and Pull Out Print Cylinder Once after Button Lights
Error reset method	First print drum safety SW: OFF; first print drum connection signal: OFF; and first print drum lock sensor: OFF
Error point	Error detecting condition
531	The print drum lock sensor is ON when the print drum lock solenoid is ON. (The check is performed 100 ms after the print drum lock solenoid switches ON.)
540	Data cannot be written to or read from the EEPROM on the print drum. (EEPROM cannot be accessed.)
542	CRC error in the EEPROM on the print drum (data error in the EEPROM).
577	The print drum is not set into position correctly.

Error type	D23 [AF Feed cover opened]
Panel display	D23-*** AF Feed Cover Opened Close AF Feed Cover
Error reset method	Set switch ON
Error point	Error detecting condition
177	The original feed cover of the Duplex AF Unit is opened.

Error type	D30 [Front cover setting demand]
Panel display	D30-*** Starting Recovery Action Close Front Cover
Error reset method	Front cover SW: ON
Error point	Error detecting condition
576	The front cover is not in position when a single print drum is set into place in position and the print drum removal button is pressed without the print drum at position B.

Error type	D41 [Print drum not installed] (Drum No. 2)
Panel display	D41-*** Set Print Cylinder 2 in Place
Error reset method	Second print drum safety SW: ON, second print drum connection signal: ON, and second print drum lock sensor: ON << Install the print drum to clear the error. >>
Error point	Error detecting condition
526	The print drum has been pulled out. (The connection signal, safety SW, and lock sensor are OFF.)
527	The print drum connection signal is OFF after the print drum is installed.
528	The print drum safety switch is OFF after the print drum is installed.
529	The print drum lock sensor is OFF after the print drum is installed (time-out during insertion: 5 sec).
530	The print drum connection signal does not switch OFF within 5 seconds after the print drum safety switch switched OFF when the print drum is removed.
581	The print drum safety switch turned OFF during machine operation.

Error type	D42 [Print drum incompatibility] (Drum No. 2)
Panel display	D42-*** Wrong-Type Print Cylinder Installed in Cylinder Position 2 Replace with Correct Type
Error reset method	Replace with the correct print drum. (The print drum code must match the machine model.)
Error point	Error detecting condition
532	The print drum is incompatible. (Drum code is not correct)
580	The print drum is incompatible. (Drum style is not correct)

Error type	D43 [Ink cartridge not installed] (Drum No. 2)
Panel display	D43-*** Install Ink Cartridge in Print Cylinder 2
Error reset method	Second ink cartridge set SW: ON
Error point	Error detecting condition
533	The ink cartridge set switch is OFF.

Error type	D44 [Ink cartridge incompatibility] (Drum No. 2)
Panel display	D44-*** Wrong-type Ink Cartridge Installed in Cylinder 2 or Cannot Read Ink Info Replace Ink Cartridge or Contact Dealer/Riso Office
Error reset method	Replace with the correct ink cartridge.
Error point	Error detecting condition
534	The ink cartridge is incompatible.
560	Error due to missing ink cartridge tag.
561	Ink tag communication error (tag communication error due to noise).
562	Abnormal ink tag information. Checksum error, verification error, storage of master information, etc.
564	Serial number mismatch detected during periodic ink tag serial number check.
575	Software error involving ink tag. Antenna CH selection error, erroneous writing of data to write-protected area.

Error type	D47 [Master disposal box not installed] (Drum No. 2)
Panel display	D47-*** Set Master Disposal Box 2 in Place
Error reset method	Second master disposal box safety SW: ON << Install the master disposal box to clear the error. >>
Error point	Error detecting condition
310	The master disposal box safety switch is OFF.

Error type	D58 [Print drum ready to pull-out] (Drum No. 2)
Panel display	D58-*** Print Cylinder 2 has been Unlocked
Error reset method	Second print drum connection signal: ON -> OFF and second print drum safety SW: ON -> OFF << Pull out the print drum to clear the error. >> Or front cover SW: ON << Close the front cover to clear the error. >> Or master-making unit release button: ON << Press the master-making unit release button to clear the error. >>
Error point	Error detecting condition
522	The print drum is in the pull-out position. (The print drum lock solenoid is ON.)

Error type	D62 [Print drum pull-out command] (Drum No. 2)
Panel display	D62-*** Print Cylinder 2 is not Set in Place Press Cylinder Release Button and Pull Out Print Cylinder Once after Button Lights
Error reset method	Second print drum safety SW: OFF; second print drum connection signal: OFF; and second print drum lock sensor: OFF
Error point	Error detecting condition
531	The print drum lock sensor is ON when the print drum lock solenoid is ON. (The check is performed 100 ms after the print drum lock solenoid switches ON.)
540	Data cannot be written to or read from the EEPROM on the print drum. (EEPROM cannot be accessed.)
542	CRC error in the EEPROM on the print drum (data error in the EEPROM).
577	The print drum is not set in position correctly.

6. Warnings (E**: Service engineer call)

Error type	E01 [Battery replacement]
Panel display	E01-*** !!Battery Replacement!! Call Service
Error reset method	Press the Reset key.
Error point	Error detecting condition
010	Battery voltage is below 2.1 V when power is switched ON (replacement of battery required). * Since the battery voltage detected by the software is 0.5 V below the actual battery voltage, error detection activates when the value set in the RTC is below 1.6 V. * Precautions for battery replacement Switch ON main power before replacing the battery. If the battery is replaced with the main unit OFF, the following two problems may occur: The internal clock data will be incorrect. -> Reset the clock. The <T25-026 No-battery> error will be issued once again when power is switched ON after battery replacement. -> Switch power OFF, then ON again, and confirm that no error is issued.

Error type	E02 [Maintenance call]
Panel display	E02-*** !!Maintenance!! Call Service
Error reset method	Press the Reset key.
Error point	Error detecting condition
011	The master count reached the value set in the Test Mode at power ON, reset, or operation completion (maintenance call).
012	The copy count reached the value set in the Test Mode at power ON, reset, or operation completion (maintenance call).
022	The maintenance count in the print drum reached the value set in the Test Mode at power ON, reset, or operation completion (maintenance call).

7. Warnings (F**: Others)

Error type	F01 [No master on Drum No. 1]
Panel display	F01-*** No Master on Print Cylinder 1 Make a New Master
Error reset method	Press the Reset key. Set an original and execute the master-making operation.
Error point	Error detecting condition
015	There is no master on the print drum at the start of printing.

Error type	F02 [Paper/master-making size incompatibility 1]
Panel display	F02-*** Page Format is Larger than Paper Size !! Possible Ink Smudges on Prints !!
Error reset method	Press the Continue button or Stop button (Check print paper size).
Error point	Error detecting condition
018	Paper and master-making sizes (master size on print drum) do not match at the start of printing.

Error type	F03 [Multi-up: Paper size error]
Panel display	F03-*** !! Multi-Up is Not Available with This Paper Size !! Replace with Proper Paper of Standard Size
Error reset method	Press the Close button. Set standard-size paper on the paper feed tray.
Error point	Error detecting condition
016	The multi-up operation was executed with nonstandard paper.

Error type	F10 [Paper/master-making size incompatibility 2]
Panel display	F10-*** Page Format is Larger than Paper Size !! Possible Ink Smudges on Prints !! (Continue->PROOF Key)
Error reset method	Press the Continue button or Stop button. (Check print paper size.)
Error point	Error detecting condition
021	Paper and master-making sizes (master size on print drum) do not match at the start of proof printing.

Error type	F24 [Auto size reproduction disabled (falls outside range of possible size reproduction)]
Panel display	F24-*** !! Images may not fit in Frame of Paper with This Reproduction Size !! Re-perform the size setting
Error reset method	Press the Reset key. (Manually enter the size reproduction setting.)
Error point	Error detecting condition
037	Size reproduction setting falls outside the permissible range when the operation started based on the auto size reproduction setting.

Error type	F30 [Multiple feed check]
Panel display	F30-*** !! Possible Multiple Paper Feed !! Check Printed Copies
Error reset method	Press the Multiple Feed Detection OFF button or Reset key.
Error point	Error detecting condition
425	Multiple feed with the first sheet.
426	Multiple feed.

Error type	F32 [Storage memory: No space available]
Panel display	F32-*** !! The Data Storage Area has Become Full !! Clear Old Storage Data
Error reset method	Press the Reset key. (Check the available capacity.)
Error point	Error detecting condition
713	Inadequate storage memory during data write.

Error type	F37 [Combined use of book mode and AF not possible]
Panel display	F37-*** !! Book Shadow Editor is Not Available with ADF !! Place Original on Stage Glass
Error reset method	Press the Close button.
Error point	Error detecting condition
050	With book mode set, an original was found on the AF at the start of the master-making operation.

Error type	F43 [DtoP original/paper incompatibility]
Panel display	F43-*** !! Unmatched Size-- Current Page and Printing Paper !! Check Paper Size
Error reset method	Press the Continue button or Stop button. (Check print paper size.)
Error point	Error detecting condition
902	Paper and original sizes do not correspond at the start of DtoP master-making.

Error type	F44 [Auto size reproduction disabled (exceeds original size detection range)]
Panel display	F44-*** !! No Auto Reproduction with This Original and Printing Paper !! Select Size Manually
Error reset method	Press the Reset key. (Manually enter the size reproduction setting.)
Error point	Error detecting condition
901	The original size detection failed. (The original did not conform to the detection specification.)

Error type	F45 [Presence of original unknown/no original]
Panel display	F45-*** Original Undetected Reset Original
Error reset method	Reset the original. Press the Continue button or Stop button.
Error point	Error detecting condition
954	Master-making operation or RLP output was executed with the auto tray or auto size reproduction setting set to ON, and the presence of an original could not be detected.
959	Master-making operation or RLP output was executed without an original.
981	When the Next button was clicked on the multi-up count entry screen of Multi-up Wizard, no original was detected.

Error type	F46 [Print drum color not matching with DtoP job color] (Drum No. 1)
Panel display	F46-*** !! Unmatched Color -- Data Color and Cylinder Color 1 !! Change Print Cylinder Color: (Color name)
Error reset method	Press the Reset key or the Continue button. (Replace the print drum.)
Error point	Error detecting condition
903	The color of the print drum fails to match between the color specified for DtoP job and the color set for the specified print mode.

Error type	F47 [Combined use of AF and postcard size reproduction not possible]
Panel display	F47-*** [A4->Card] Reproduction is Not Available in combination with ADF Place Original on Stage Glass
Error reset method	Remove the original from the AF and press the Close button.
Error point	Error detecting condition
904	Master-making operation or RLP output was performed with <A4 -> Postcard> size reproduction selected and original set on the AF.

Error type	F48 [Multi-up: Outside original size detection range]
Panel display	F48-*** Original Size Exceeds Limitation of Multi-Up Specify Original Size
Error reset method	Press the Reset key.
Error point	Error detecting condition
955	Multi-up is selected with non-applicable original size or customs size original.

Error type	F49 [Multi-up: No original when Start key pressed]
Panel display	F49-*** Original Undetected Reset Original
Error reset method	Press the Stop button.
Error point	Error detecting condition
989	No original is detected when the Enter key is pressed for the single original/multi-original multi-up setting.

Error type	F52 [Use of RLP mode not possible (RLP information not acquired)]
Panel display	F52-*** Acquiring Linked Printer Configuration Data Please Wait a Moment
Error reset method	Press the Close button.
Error point	Error detecting condition
912	RLP mode cannot be used. (RLP information has not been acquired.)

Error type	F58 [Use of RLP mode not possible (NET-D initialization in process)]
Panel display	F58-*** Starting Up RISORINC-NET Please Wait a Moment
Error reset method	Press the Close button.
Error point	Error detecting condition
927	RLP mode cannot be used. (The NET-D is being initialized.)

Error type	F60 [RLP auto-link/master-making continuation confirmation (when printing quantity is 0)]
Panel display	F60-*** !! Number of Copies is set to "0"!! Printing Operation will Start on this Printer (Continue -> START key)
Error reset method	Press the Start key or Stop button.
Error point	Error detecting condition
929	Confirmation of auto-link operation/master-making continuation (when printing quantity is 0).

Error type	F61 [RLP paper/original size incompatibility]
Panel display	F61-*** Set Proper Paper Size in the Linked Printer
Error reset method	Select paper using Manual Feed or Paper Selection.
Error point	Error detecting condition
930	RLP paper/original size is incompatible.

Error type	F62 [RLP auto-link/RLP error]
Panel display	F62-*** !!Auto-Link Operation is Not Available!! Specified Linked Printer may be in Error or Turned OFF
Error reset method	Press the Stop button
Error point	Error detecting condition
956	Error generated on the RLP side during RLP auto-link operation.

Error type	F63 [RLP auto tray selection/nonstandard-size original]
Panel display	F63-*** !! No Auto Paper Size Selection with Irregular Size Original !! Select Paper Size and then Restart
Error reset method	Press the Reset key. (Manually select paper.)
Error point	Error detecting condition
971	RLP output was performed with a nonstandard-size original and auto paper size selection.

Error type	F64 [Specified function disabled, at job reception]
Panel display	F64-*** Processing Print Data from PC This Function is Not Available while Process- ing Current Data
Error reset method	Press the Close button.
Error point	Error detecting condition
964	An instruction involving an exclusive function (scan mode, overlay, name insertion, digitizer, hold, easy separation) was issued for DtoP job reception, development, or awaiting-output status.

Error type	F65 [Scan mode auto-saving size selection/nonstandard-size original]
Panel display	F65-*** Auto Page Size Selection is Not Available for Irregular-Size Original Select Format Size to Store and then Restart
Error reset method	Press the Reset key. (Manually select storage size.)
Error point	Error detecting condition
965	The size selected in auto size (storage data) selection at the start of scanning operation was nonstandard.

Error type	F66 [RLP saddle stitching not possible]
Panel display	F66-*** Saddle Stitching is Not Available with This Paper Size
Error reset method	Press the Close button.
Error point	Error detecting condition
962	The paper in the specified paper feed tray was not A3, B4, or A4 (landscape) at the time of RLP output with saddle stitching function switched ON.

Error type	F67 [RLP rotation sorting not possible]
Panel display	F67-*** !! Improper Paper for Rotation Sorting !! Set Same Sized Paper in 2 Trays, One in Horizontal and Other in Vertical Direction
Error reset method	Press the Close button.
Error point	Error detecting condition
963	No paper of the size specified by the RLP Paper Tray is set in either portrait or landscape orientation at the time of RLP output with rotation sorting function switched ON.

Error type	F68 [Specified area/traced color separation: Excess number of specified areas]
Panel display	F68-*** !! Exceeding Number of Editing Areas Selected !! Deselect Some Areas and Redo Color Separation
Error reset method	Press the Reset key.
Error point	Error detecting condition
173	The number of specified areas for specified area/traced color separation exceeded the maximum value.

Error type	F69 [Specified area/traced color separation: Distance of border for specified area longer than master-making size]
Panel display	F69-*** Cannot Read Selection Area Reset Original Correctly
Error reset method	Press the Reset key.
Error point	Error detecting condition
174	The distance of the border of the specified area for specified area/traced color separation exceeds the length against the master being made.

Error type	F70 [Specified area/traced color separation: Image processing time-out error]
Panel display	F70-*** !! Complicated Area Form !! Re-circle Editing Areas and Redo Color Separation
Error reset method	Press the Reset key.
Error point	Error detecting condition
175	Image processing time-out error during specified area/traced color separation.

Error type	F71 [No master on Drum No. 2]
Panel display	F71-*** No Master on Print Cylinder 2 Make a New Master
Error reset method	Press the Reset key. Set an original and execute the master-making operation.
Error point	Error detecting condition
015	No master is found on the print drum at the start of printing.

Error type	F72 [Hand-written/red-color separation: Image processing time-out error]
Panel display	F72-*** !! Complicated Area Form !! Re-circle Editing Areas and Redo Color Separation
Error reset method	Press the Reset key.
Error point	Error detecting condition
176	Image processing time-out error during hand-written/hand-written (ink)/red-color separation.

Error type	F73 [Auto tray selection not possible, RLP tray designation disabled]
Panel display	F73-*** Paper Size cannot be Defined by Specified Reproduction Size Select Paper Size Manually
Error reset method	Select paper using Manual Feed or Paper Selection. Press the Reset key.
Error point	Error detecting condition
975	The specified fixed size reproduction and the detected original size do not match at the start of RLP. Or zoom/independent size reproduction was specified.

Error type	F74 [150ppm not possible due to low temperature]
Panel display	F74-*** Printer Temperature is Low <150ppm> is Not Available [Cancel] [Continue]
Error reset method	Press the Stop button or Continue button.
Error point	Error detecting condition
980	150ppm printing was selected at temperatures below 15°C while using the second print drum.

Error type	F75 [Combined use of specified area separation and AF not possible]
Panel display	F75-*** Specified Area Separation is Not Available in Combination with ADF Place Original on Stage Glass
Error reset method	Press the Reset key.
Error point	Error detecting condition
985	With specified area separation selected, an original was on the AF at the start of master-making.

Error type	F76 [Print drum color not matching with DtoP job color] (Drum No. 2)
Panel display	F76-*** !! Unmatched Color -- Data Color and Cylinder Color 2 !! Change Print Cylinder Color: (Color name)
Error reset method	Press the Reset key or Continue button. (Replace the print drum.)
Error point	Error detecting condition
903	The color of the print drum to be used fails to match with the DtoP job specified print color.

Error type	F77 [Print drum color not matching with DtoP job color] (Drum No. 1)
Panel display	F77-*** !! Unmatched Color -- Data Color and Cylinder Colors !! Change Print Cylinders Color: (Color name)
Error reset method	Press the Reset key or Continue button. (Replace the print drum.)
Error point	Error detecting condition
903	The color of the print drum to be used fails to match with the DtoP job specified color.

Error type	F78 [Digitizer: Stage cover open]
Panel display	F78-*** Close Stage Cover If original moves you may not get desired result
Error reset method	Close the stage cover. Press the Close button.
Error point	Error detecting condition
731	The stage cover was opened during the digitizing operation.

Error type	F79 [Digitizer: No original during rescanning]
Panel display	F79-*** Set Original and Press Start Key Re-scanning will be Started to Add Image Processing
Error reset method	Press the Start key or Stop button.
Error point	Error detecting condition
732	No original was detected at the start of digitizer rescanning.

Error type	F80 [Paper not compatible with dual-color printing]
Panel display	F80-*** Dual-Color Printing is Not Available for This Paper Size Load Paper Larger than B5 Portrait
Error reset method	Press the Reset key. (Use paper larger than the minimum size.)
Error point	Error detecting condition
966	The paper size is smaller than the minimum paper size for dual-color printing.

Error type	F81 [Dual-color printing: Ink-saving setting only for one print drum]
Panel display	F81-*** Either of Masters is Made in Ink Saving Process Operate Dual-Color Printing?
Error reset method	Press the Stop button or Continue button.
Error point	Error detecting condition
967	At the start of dual-color printing operation, the master was made with one print drum in ink-saving master-making mode and the other in normal master-making mode.

Error type	F82 [Paper not compatible for Drum NO. 2 printing]
Panel display	F82-*** Printing is Not Available for This Paper Size with Print Cylinder 2 Set Print Cylinder to be Used in Cylinder Position 1 and Re-select Printing Mode
Error reset method	Press the Reset key.
Error point	Error detecting condition
974	The paper size is smaller than the minimum paper size for printing with Drum No. 2.

Error type	F83 [Use of Drum No. 2 mode not possible]
Panel display	F83-*** Printing is Not Available for This Setting with Print Cylinder 2 Set Print Cylinder to be Used in Cylinder Position 1 and Re-select Printing Mode
Error reset method	Press the Reset key.
Error point	Error detecting condition
973	There is no confidential master on Drum No. 1 at the start of printing/proof-printing operation with Drum No. 2.

Error type	F85 [Scanning not possible: External CI not connected]
Panel display	F85-*** ! Scanning is Not Possible ! External CI is not Connected or Processing Connection Check Cable Connection
Error reset method	Press the Close button or Start key.
Error point	Error detecting condition
995	The PS7R is not connected.
997	Jog is unsuccessfully deleted from PS7R.
998	Sanned data unsuccessfully received by PS7R.

Error type	F90 [Supply stock management (ink)]
Panel display	F90-*** Check Stock of Required Ink and Please Order If Needed
Error reset method	Press the Close button.
Error point	Error detecting condition
957	Stock management counter for the relevant color ink is over the Specified quantity (setting value).

Error type	F91 [Supply stock management (master)]
Panel display	F91-*** Check Stock of Required Master and Please Order If Needed
Error reset method	Press the Close button.
Error point	Error detecting condition
958	Stock management counter for the master is over the Specified quantity (setting value).

Error type	F93 [Reproduction ratio is larger than the master making area]
Panel display	F93-*** Present reproduction ratio may not fit in the master making area Please check Please Order If Needed
Error reset method	Press START key to continue, or press CANCEL key to stop. (Change the reproduction ratio manually)
Error point	Error detecting condition
936	With the reproduction ratio set to AUTO, the reproduction image size became larger than the master making area.

Error type	F94 [Protect confirmation (compulsory)]
Panel display	F94-*** - protect - The master will be removed Please Order If Needed
Error reset method	Press START key.
Error point	Error detecting condition
007	The protect function is active when the machine power is turned ON, waking up from sleep, or when the print drum is inserted in the machine.

Error type	F95 [Protect confirmation]
Panel display	F95-*** - protect - The master will be removed Please Order If Needed
Error reset method	Press START key to remove the master, or press STOP key to keep the master on the drum.
Error point	Error detecting condition
008	The message displays after current job is finished with the protect function active.

8. Parameter Errors (H**)

Error type	H01 [General supply parameter input] (Drum No. 1)
Panel display	Ink (Cylinder 1) Cannot Get Consumables Info Input Values Required
Error reset method	Enter the parameters and press the Start key.
Error point	Error detecting condition
566	Enter parameters, since first ink tag color information, steady-state viscosity information, and FP viscosity information are unreliable.

Error type	H04 [General supply parameter input (master)]
Panel display	Ink (Master) Cannot Get Consumables Info Input Values Required
Error reset method	Enter the parameters and press the Start key.
Error point	Error detecting condition
242	Enter parameters, since master tag sensitivity information, steady-state viscosity information, and FP viscosity information are unreliable.

Error type	H07 [General supply parameter input] (Drum No. 2)
Panel display	Ink (Cylinder 2) Cannot Get Consumables Info Input Values Required
Error reset method	Enter parameters and press the Start key.
Error point	Error detecting condition
571	Enter parameters, since second ink tag color information, steady-state viscosity information, and FP viscosity information are unreliable.

2. J-type Error Display

Paper jam (including AF original feed error) generates an internal [A**] error. However, since this type of error is combined with another error code, the panel displays a [J**] error code.

<**> in the [J**] error code is a value obtained by assigning a bit to each error (one of four types shown in the table below) subject to paper jam processing and adding the numeric values corresponding to the assigned bits.

The detailed error code is displayed by pressing the < * > key.

Error type	J** [Paper jam error]
Panel display	J** Paper Jam Remove Paper in Indicated Areas and Press [OK] Button

Error type	Error name	Bit	Numeric value
A10	AF original feed error	Bit 0	1
A09	Paper ejection error	Bit 1	2
A08/A48	Paper jam on print drum	Bit 2	4
A07	Paper feed error	Bit 3	8
A25	Central transport error	Bit 4	16

Example) When <A10> and <A08> are generated, [J05] is displayed.

3. Errors Saved in Memory

The following errors are saved in memory and cannot be cleared simply by switching off the power.

Error type	Description
A04	Master removal error on first print drum side
A44	Master removal error on second print drum side
A08	Paper jam on first print drum
A48	Paper jam on second print drum
A25	Central transport error
C01	First ink cartridge replacement
C41	Second ink cartridge replacement
C02	Master roll replacement
C03	First master disposal box full
C43	Second master disposal box full
C05	Both master disposal boxes full

CHAPTER 17: OTHER PRECAUTIONS

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1. Machine Setup During the Installation

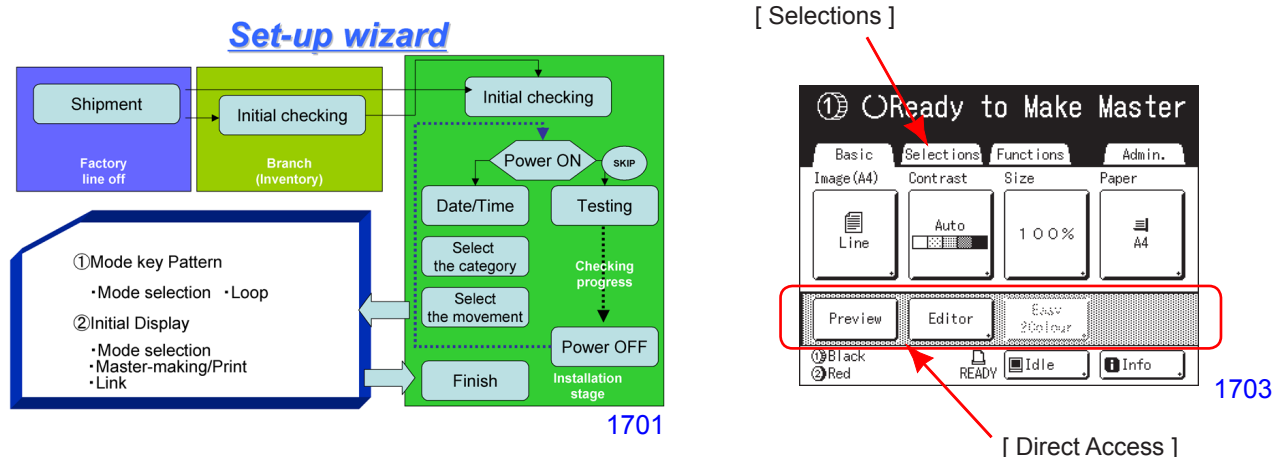
1) Set-up Wizard

Set-up wizard is designed for enhancing customer satisfaction with his or her RZ5 unit, depending on the type of customer account. Until the Set-up wizard is completed at the time of the machine installation, the Set-up wizard display keeps popping up each time the machine power is turned ON.

Typically used functions at commercial, educational and print shop accounts are pre-registered at [BASIC], [SCHOOL] and [PRINTING] respectively.

Set-up wizard is deeply related in providing maximum functionality with the RISO i Quality System benefits.

In order to take the maximum advantage of the RISO i Quality System, the [setting of the machine clock] is essential.



Set-up wizard customer brackets				
User Category	Area Name	Master-Making Screen	Print Screen	Link Screen
STANDARD	DIRECT ACCESS	Dot	Renew	Dot
		Reserve	Reserve	
		2 in 1	Interval	
	SELECTIONS	Memory	Memory	Memory
		Confidential	Confidential	
		Idling	Idling	
		Book		
SCHOOL	DIRECT ACCESS	Dot	Renew	Dot
		Reserve	Reserve	
		2 in 1	Interval	
	SELECTIONS	Memory	Memory	Memory
		Confidential	Confidential	
		Idling	Idling	
		Program		
PRINTING	DIRECT ACCESS	Dot	Renew	Dot
		Reserve	Reserve	
		2 in 1	Interval	
	SELECTIONS	Memory	Memory	Memory
		Confidential	Confidential	
		Idling	Idling	
		Book		
		Program		

1702

2. Sales Mode

1) Easy access to change the machine settings by the Salesman and Serviceman.

Turn the machine power ON, while pressing the + key and x key on the Operation Panel.

The [Sales Mode] is essential in setting the machine to the best condition to suit each customer.

The activation of the Sales mode helps troubleshooting the minor troubles on the machine.

There are total of 25 items under the Sales Mode. The first 2 items, starting with P are linked to the Admin. (user mode), and the remaining 23 items are linked to the serviceman test mode.

The [Sales Mode] is for the use by the Salesman and the Serviceman's use only, and is not intended for the customer (operator) use.

Code No.	Item
P001	Displayed Language
P002	Link-Free Volume (with Linked Printer)
P003	Base IP Address
P004	Beep Sound
0080	Test Print A
0095	System Configuration Data Output
0110	Clear Error Status Data
0116	Set-up Wizard Initialize
0126	Optional Configuration Check
0150	Print Quantity Repeat Setting
0154	Min. Print Quantity Control
0159	Warning Display Control
0160	Auto Multi-Up Recovery
0161	Program Print Repeat Setting
0166	Max. Print Quantity Control
0167	Paper ID Auto-Repeat Control
0168	Fine Adjustment Button Display Control
0169	Admin. Display Control
0170	Consumable Storage Indication
0199	Paper Size Detection Selection
0951	Ink Color Code
0956	Automatic Print Position Reset Condition Setting
0977	Vertical and Horizontal Motion Distance Switching
1229	Linked Printer Mode Enable Control
3572	Zero Print Master Making Warning
3579	Linked Printer Duplex Print Auto-Repeat

1704

3. Firmware Downloading Procedure

- (1) Switch OFF the machine power.
 - (2) Remove the download slot cover from the side of the rear cover, on the paper-feed side of the machine, by removing one screw (M3x6 : 1 pc).
 - (3) Insert the downloading CF card in a card adaptor, containing appropriate firmware for the Mechanical control PCB and SH4F PCB for the specific machine model.
 - (4) Turn ON the machine power. The firmware for the Mechanical control PCB is automatically downloaded the first. The green LED 3 on the SH3M2 PCB, as well as the LED on the wake-up key on the operation panel starts to blink. The program is being downloaded.
 - (5) When the green LED 3, green LED 2 and LED on the wake-up key changes from blinking to a solid light, the firmware downloading to the Mechanical control PCB is successfully finished. The firmware downloading to the SH4F PCB starts automatically. The green LED 3 lights solid, and both the green LED 2 and the wake-up key LED blinks to indicate that the downloading has started. The firmware downloading to the SH4F PCB is successfully finished when the green LED 3, green LED 2 and wake-up LED all lights solid.
 - * If a red colored LED 1 aside the download slot blinks and the wake-up key LED changes to a solid light, the firmware downloading to the Mechanical control PCB went through an error and ended unsuccessfully.
 - * If a red colored LED 1 aside the download slot lights up to a solid light and the wake-up key LED changes to a solid light, the firmware downloading to the SH4F PCB went through an error and ended unsuccessfully.
- In both above cases, if the downloading ended unsuccessfully, the firmware downloading procedure must be repeated from the very beginning, which is step (3) of this procedure.
- (6) After the firmware downloading is successfully finished, switch OFF the machine power and remove the downloading CF card from the machine.
 - (7) Mount the download slot cover back on the machine.

The Slot to insert the downloading CF card in a card adaptor.



1705

4. Downloading the DSP Software

NOTE: The DSP Software is required to synchronize the Second Paper Feed Motor to the Main Motor. The DSP Software is download in the Mechanical Control PCB. If the Mechanical Control PCB is replaced, the DSP Software must be downloaded (refer to item-5, page 17-6).

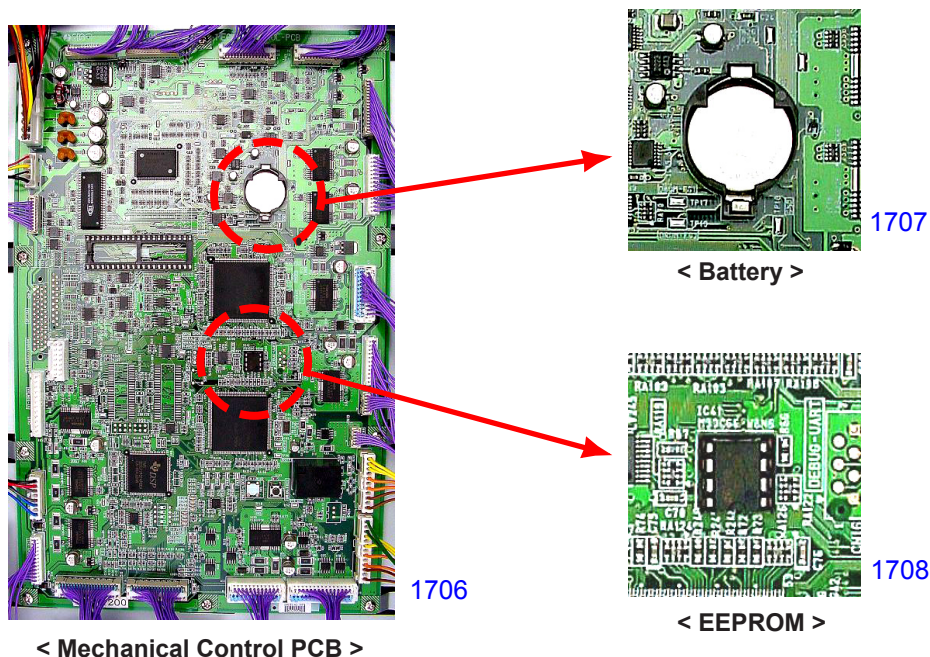
The DSP Software changes the speed of the Second Paper Feed Motor when feeding the paper from the second paper feed area to the print drum, according to the print drum angle when the Timing Roller and Guide Roller start feeding the paper. This control action keeps the image print position constant on all the prints. The DSP Software also controls the Second Paper Feed Motor speed the moment the print drum pinches the leading edge of the paper. When the leading edge of the paper arrives at the print drum, according to the paper size and to which print drum the paper is sent to, the trailing edge of the paper is still pinched by the Timing Roller and Guide Roller. The DSP Software makes sure that the Second Paper Feed Motor feeds the paper in the same speed as the print drum to ensure smooth paper feeding through the printing area to prevent smeared image which may occur if the Timing Roller and Guide Roller pull on the paper during the printing.

The DSP Software version should match with that of the Mechanical Control and SH4F PCB firmware. The compatibility information on the firmware program versions will be issued at the same time when updated DSP Software is announced.

- (1) With the appropriate firmware for the mechanical control PCB and for the SH4F PCB downloaded, turn ON the machine in test mode to confirm that the machine properly goes into Test Mode.
- (2) Switch OFF the machine power and insert the download CF card, in an adopter, containing the DSP software.
- (3) Launch Test Mode and run Test Mode No. 102 [DSP Download (Main, Secondary)].
- (4) Check the operation panel and make sure that the download is completed (The download should take around one minute).
- (5) Switch OFF the machine power and remove the CF card.
- (6) Launch Test Mode again and run Test Mode No. 126 (Optional Configuration Check). Check the software version on the display to confirm that the DSP Software is upgraded.
- (7) If an error occurs during this process, repeat the procedure from the beginning.

5. Replacing the Mechanical control PCB

- (1) Remove the first and second print drums out from the machine.
- (2) Switch off power, remove the EEPROM and battery from the existing mechanical control PCB, and dismount the existing PCB from the machine.
- (3) Reinstall the EEPROM and battery removed in Step (2) to a new mechanical control PCB and mount the new mechanical control PCB on the machine.
- (4) Download the firmware for the mechanical control PCB (See the appropriate section of this Chapter). The firmware version to download must be the same version as it was on the previous Mechanical control PCB to match with the firmware version now on the existing SH4F PCB on the machine.
- (5) Download the DSP software (See the appropriate section of this Chapter). The DSP software version should be the same version that was on the pervious Mechanical control PCB to match with the firm-ware versions on the Mechanical control PCB and SH4F PCB.
- (6) Switch OFF power and enter Test Mode.
- (7) Activate Test Mode No. 9874 to access into the protected area Test Mode and run Test Mode No. 1198 (Initialize Memory), and then switch OFF the machine power.
- (8) Launch Test Mode again, and before inputting any test mode number, install the two print drums back in the machine. Then run Test Mode No. 883 (Clamp home positioning action), Test Mode No. 893 (Print Drum Lock Release Action), and Test Mode No. 900 (Vertical-centering action), for both the first and second print drums in the order given.
- (9) Activate Test Mode No. 9874 again to enter into the protected area test mode.
- (10) Without turning the power OFF, run test mode No. 1105 (Main Motor Parameter Acquisition Mode) and Test Mode No. 1106 (Second paper Feed Motor Parameter Acquisition Mode) for both the first and second print drums.
- (11) Switch the machine power OFF, and turn it back ON again.
- (12) The machine will start up normally if this procedure is performed correctly.
- (13) Set the machine calendar and time on the machine from the Admin. tab on the operation panel.



6. Replacing the SH4F PCB

1. Memo down the User Mode setting made on the machine for the re-inputting purpose at the end of the procedure.
2. Turn OFF the machine power. Then insert a clean CF (compact flash) card, in a card adopter with no data inside, into the card slot on the SH4F PCB.
3. Turn ON the machine power in Test Mode and activate Test Mode No. 103 to upload the test mode settings from the existing SH4F PCB onto the CF card.
4. Turn OFF the machine power and remove the CF card from the slot.
5. Replace the existing SH4F PCB with a new one.
6. Download SH4F PCB firmware onto the new SH4F PCB, using another CF card in a card adopter. The firmware version to download must be the same version as the one which was on the removed SH4F PCB.
7. Turn OFF the machine power once the firmware is downloaded onto the new SH4F PCB, and remove the CF card from the slot.
8. Turn the machine power back ON in Test Mode. Activate Test Mode No. 9874 to access into the protected area test mode.
9. Without turning the power OFF, activate Test Modes No.110 (Jam status clear), No.112 (test mode data clear), No.111 (user area memory clear) and No.1193 (REv data clear) in the order given.
10. Turn OFF the machine power and insert CF card, with the uploaded test mode settings, uploaded from the machine in step No. 3 above.
11. Turn the machine power back ON in Test Mode and activate Test Mode No. 105 (downloading of the stored test mode settings back into the new SH4F PCB).
12. Turn OFF the machine power and remove the CF card from the card slot.
13. Turn ON the machine power, and confirm that the machine starts up in the normal condition.
14. Complete the PCB replacement job by re-inputting the User Mode settings, copied down in Step No.1.

7. Replacing the Battery

Replace the battery on the Mechanical control PCB with the machine power ON.

- * If the battery is removed from the machine with the machine power OFF, in certain conditions the internal clock of the machine initializes to the programmed default. In that case, the internal clock of the machine (the calendar and the time) must be set from the Admin. tab of the operation panel.

8. Acquiring the Main Motor Parameters

Caution: Always acquire the main motor parameters after replacing the Mechanical control PCB or the Main motor.

- (1) Set the first and second print drums in the machine.
- (2) Activate Test Mode No. 9874 to access into the protect area Test Mode, and run Test Mode No. 1105 (Main Motor Parameter Acquisition Mode).
- (3) The print drums will begin rotating and obtain the parameters automatically.
- (4) Check the panel display to confirm that the process is completed.

9. Acquiring the Second Paper Feed Motor Parameters

CAUTION:

Always acquire the Second paper feed motor parameters each time the Mechanical control PCB or the Second paper feed motor is replaced.

- (1) Activate test mode No. 9874 to access into the protected area test mode.
- (2) Run Test Mode No. 1106 (Second Paper Feed Motor Parameter Acquisition Mode).
- (3) The guide roller moves to the nipping position against the timing roller, and the second paper feed motor begins to rotate and obtains the parameters automatically.
- (4) Check the panel display to confirm that the process is complete.

10. Replacement of the Print drum PCB

1. Memo down the User Mode setting made on the machine for the re-inputting purpose at the end of the procedure.
2. Turn OFF the machine power. Then insert a clean CF (compact flash) card, in a card adopter with no data inside, into the card slot on the SH4F PCB.
3. Turn ON the machine power in Test Mode and activate Test Mode No. 104 to upload the test mode settings from the existing Print Drum PCB onto the CF card by selecting the correct print drum on the test mode. Keep the CF card in the machine.
4. With the machine still powered ON and still in the Test Mode, open the front door of the machine and press the print drum release button (green button), and then pull out the Print Drum out of the machine.
5. Replace the Print drum PCB with a new one. Then insert the Print Drum back in the machine and close the front door.
6. With the machine still in the Test Mode, enter Test Mode 9874 to go into the protected area test mode.
7. Then activate Test Mode No.1211 and No.1212 to input the Serial Number of that Print Drum, by choosing the correct print drum on the test mode.
8. Activate Test Mode No. 106 to download the print drum test mode setting into the Print drum PCB, which was uploaded in the CF card by step No. 2 above.
9. Turn OFF the machine power, and remove the CF card from the machine.
10. Turn the machine power back ON and if the machine starts up in normal condition, the replacement procedure is completed.
11. If Error Message No. T97-990 [PC card access error: Specified file not found on the selected drive.] displays, it means that the Print Drum serial number input by Test Modes No. 1211 and No. 1212 are wrong. In this case, repeat the procedure from above step 5.
12. Complete the PCB replacement job by re-inputting the User Mode settings, copied down in Step No.1.

11. Adjusting the Print Position

Perform the procedure described below to adjust the print position:

- (1) Adjust the master clamp range (See Chapter 14 <Master-Making Section>).
- (2) Adjust the Write start position (See Chapter 14 <Master-Making Section>).
- (3) Adjust the Print start position (See Chapter 5 <Second Paper Feed Section>).
- (4) Adjust the Master-making elongation and shrinkage (See Chapter 14 <Master-Making Section>).
- (6) Adjust the FB scan start position (See Chapter 12 <FB Original Scanning Section>).
- (7) Adjust the FB scanning image elongation and shrinkage adjustment (See Chapter 12 <FB Original Scanning Section>).

Precaution in adjustment

Before making above test mode adjustments, it is important that all the mechanical components, such as the main drive area, paper feed area, print drum area, etc. are adjusted first.

If the machine is equipped with the optional Auto Document Feeder (AF), the test mode adjustment on the AF unit should be made after the adjustments on the FB (flatbed) scanning is made.

12. Adjusting the Horizontal Print Position

Perform the procedure described below to adjust the horizontal print position:

- (1) Adjust the horizontal write position (See Chapter 14 <Master-Making Section>).

MEMO

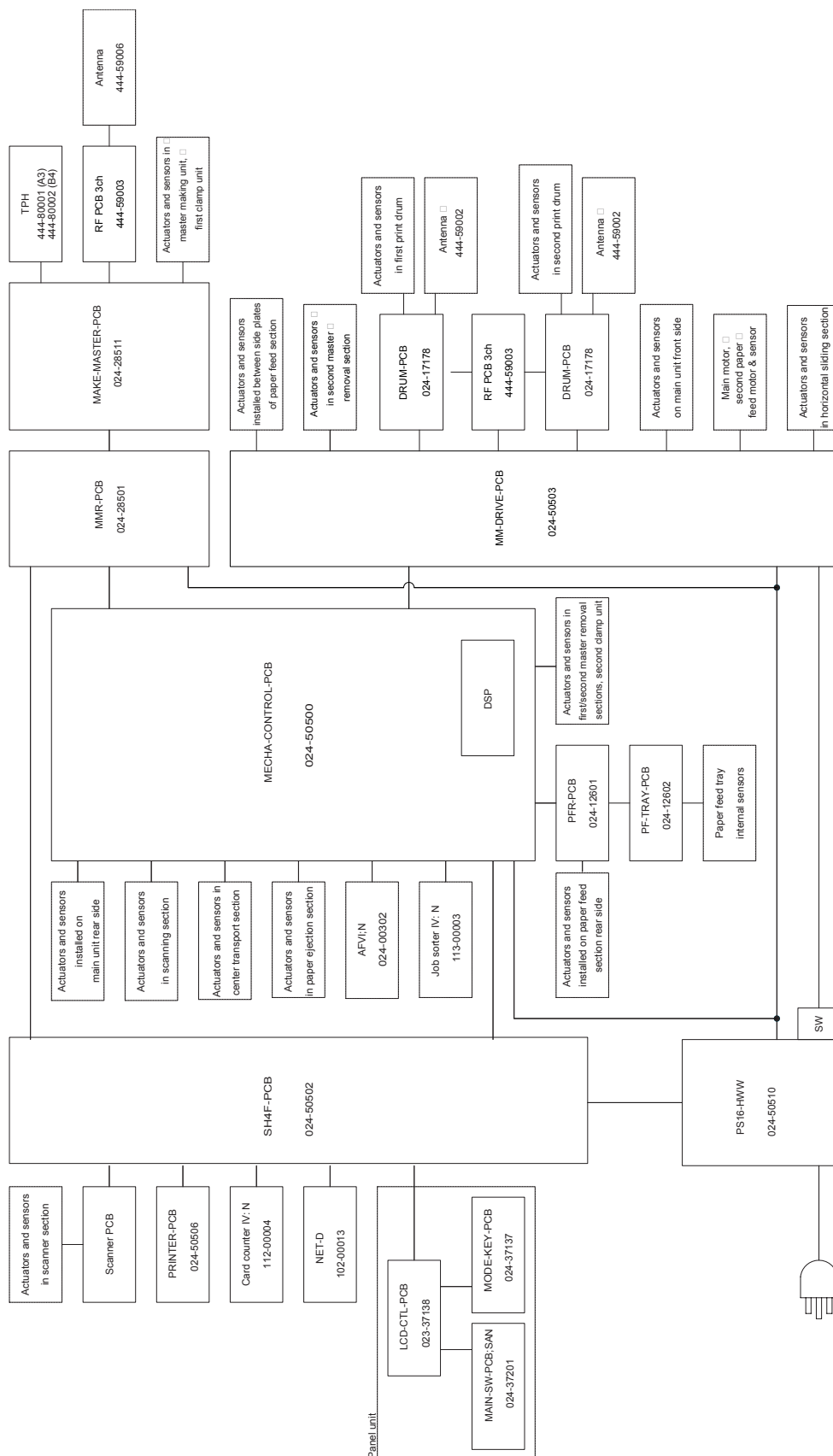
CHAPTER 18: PCBs (WIRING DIAGRAMS)

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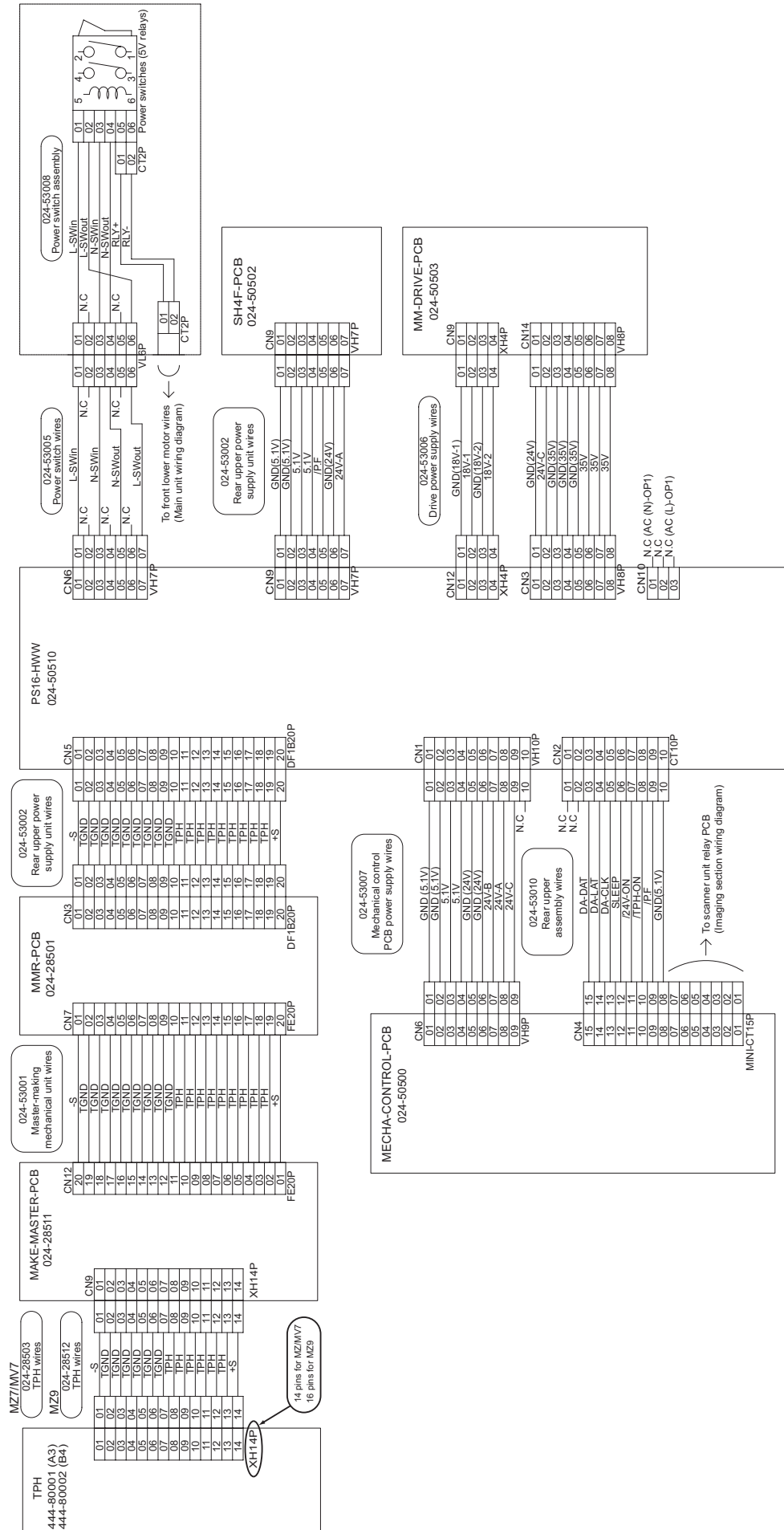
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2) Power supply section wiring diagram	18-3
3) Inter-PCB wiring diagram.....	18-4
4) Master-making section wiring diagram	18-5
5) Paper feed section wiring diagram	18-6
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3. Second Paper Feed Motor Fuse List.....	18-17

1. Wiring Diagrams

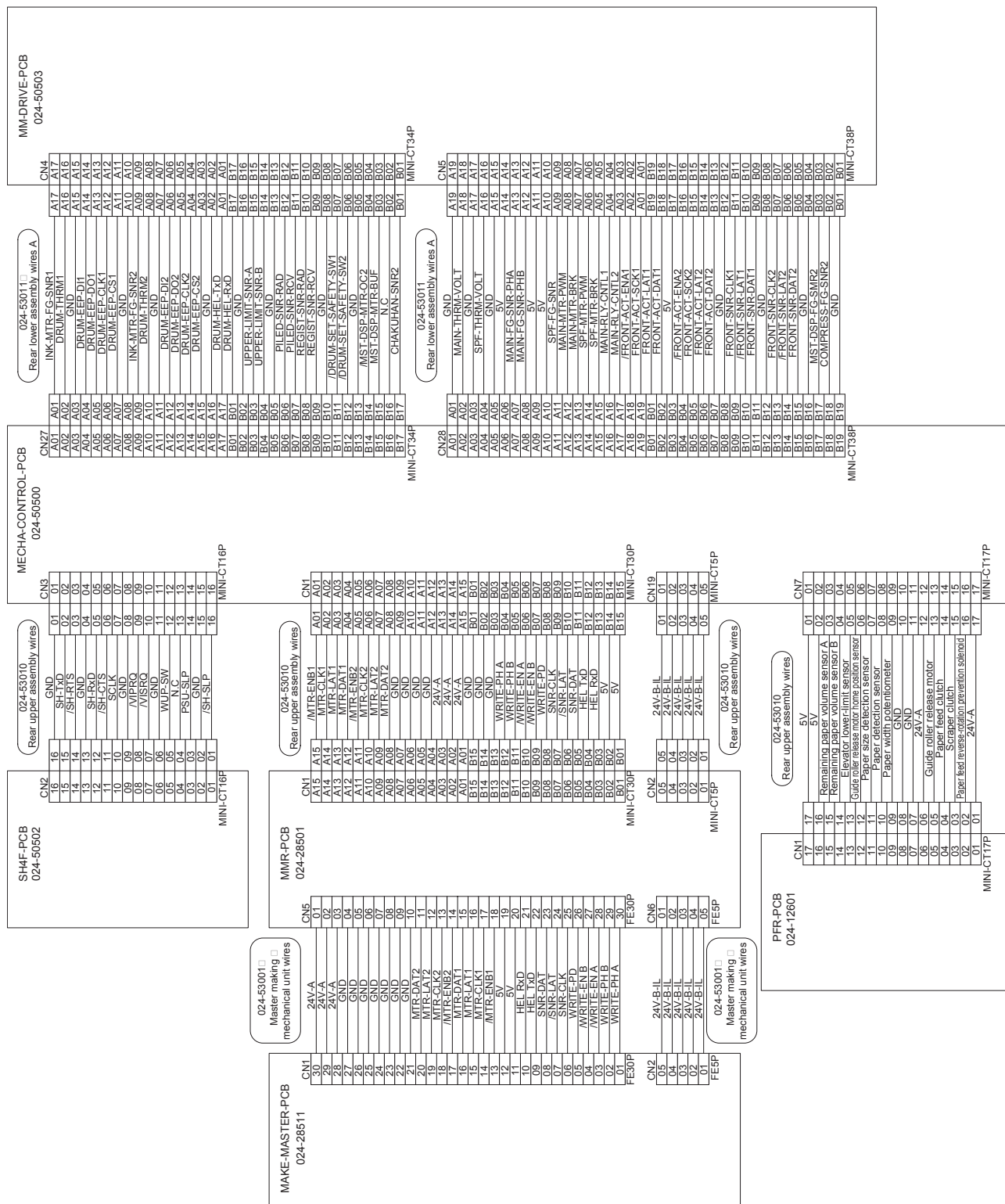
1) General wiring diagram



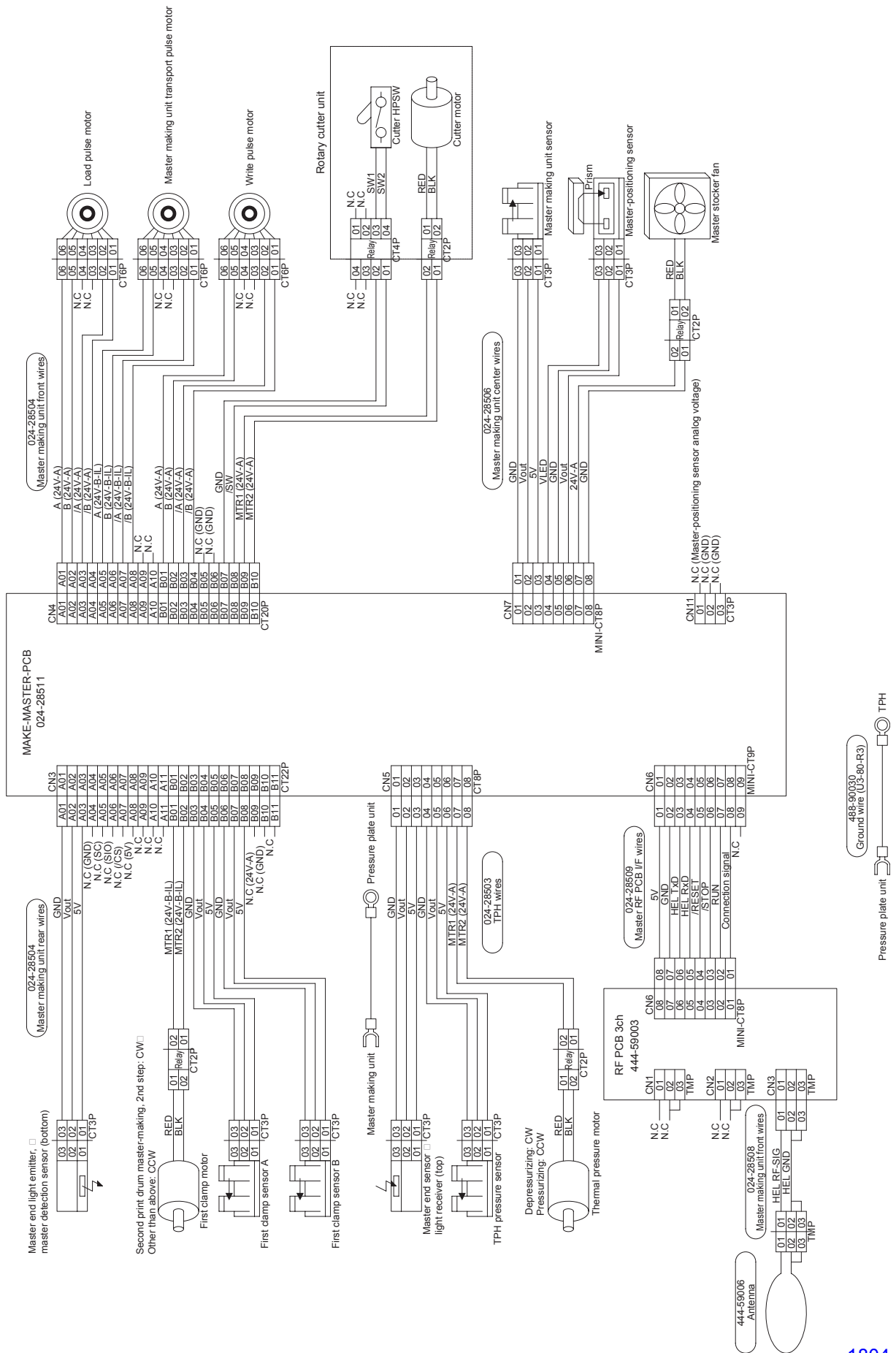
2) Power supply section wiring diagram



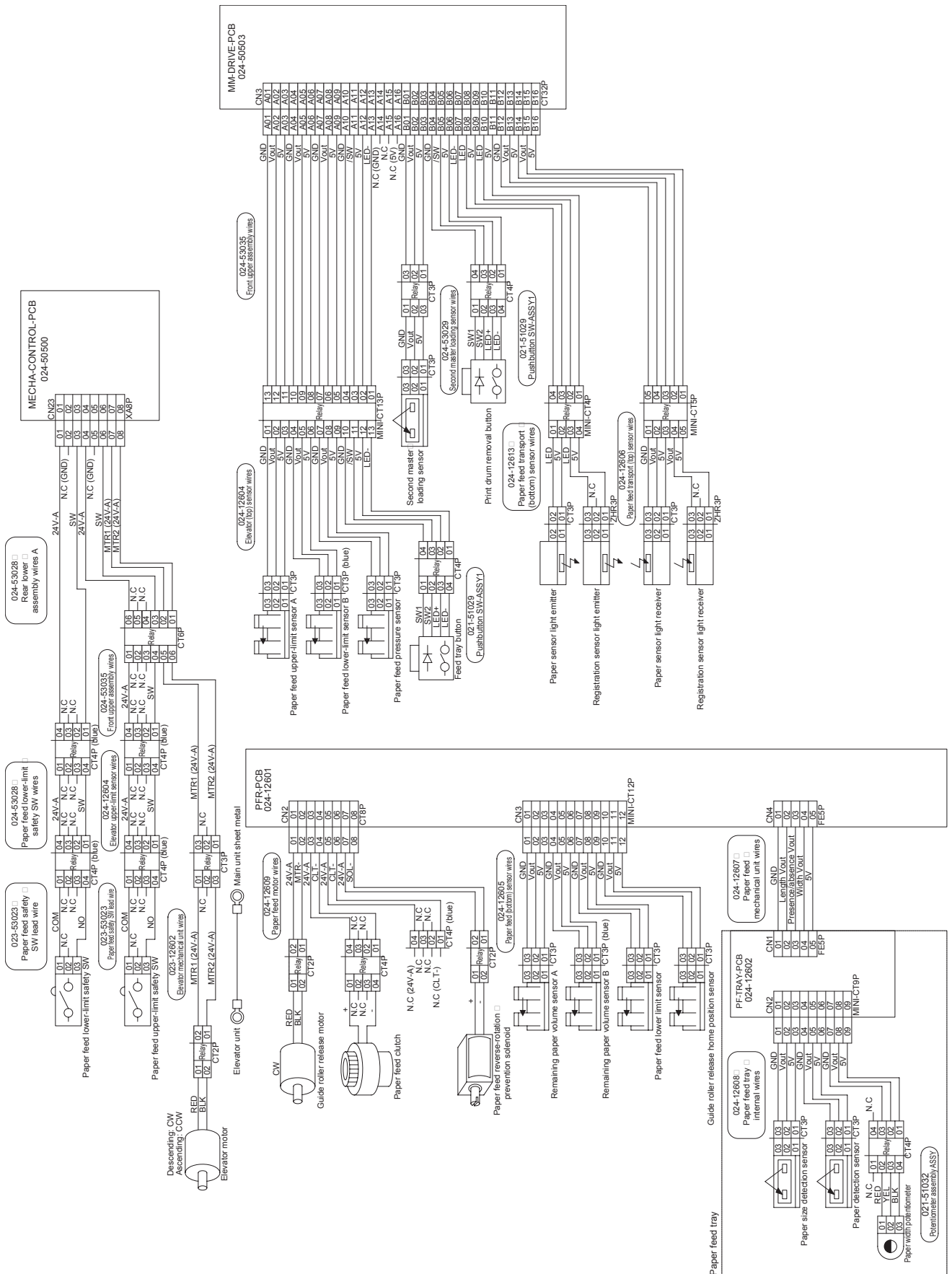
3) Inter-PCB wiring diagram



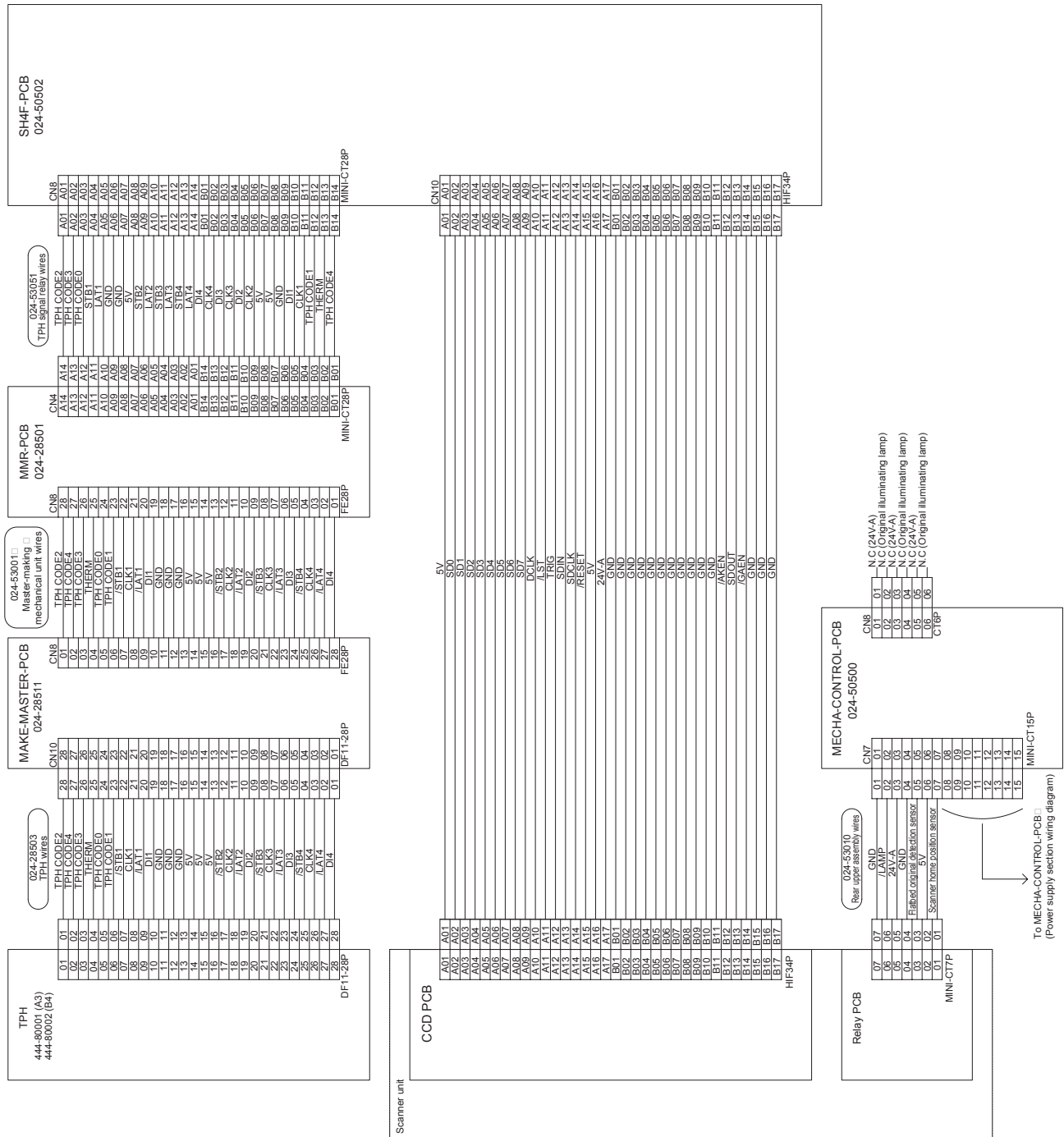
4) Master-making section wiring diagram

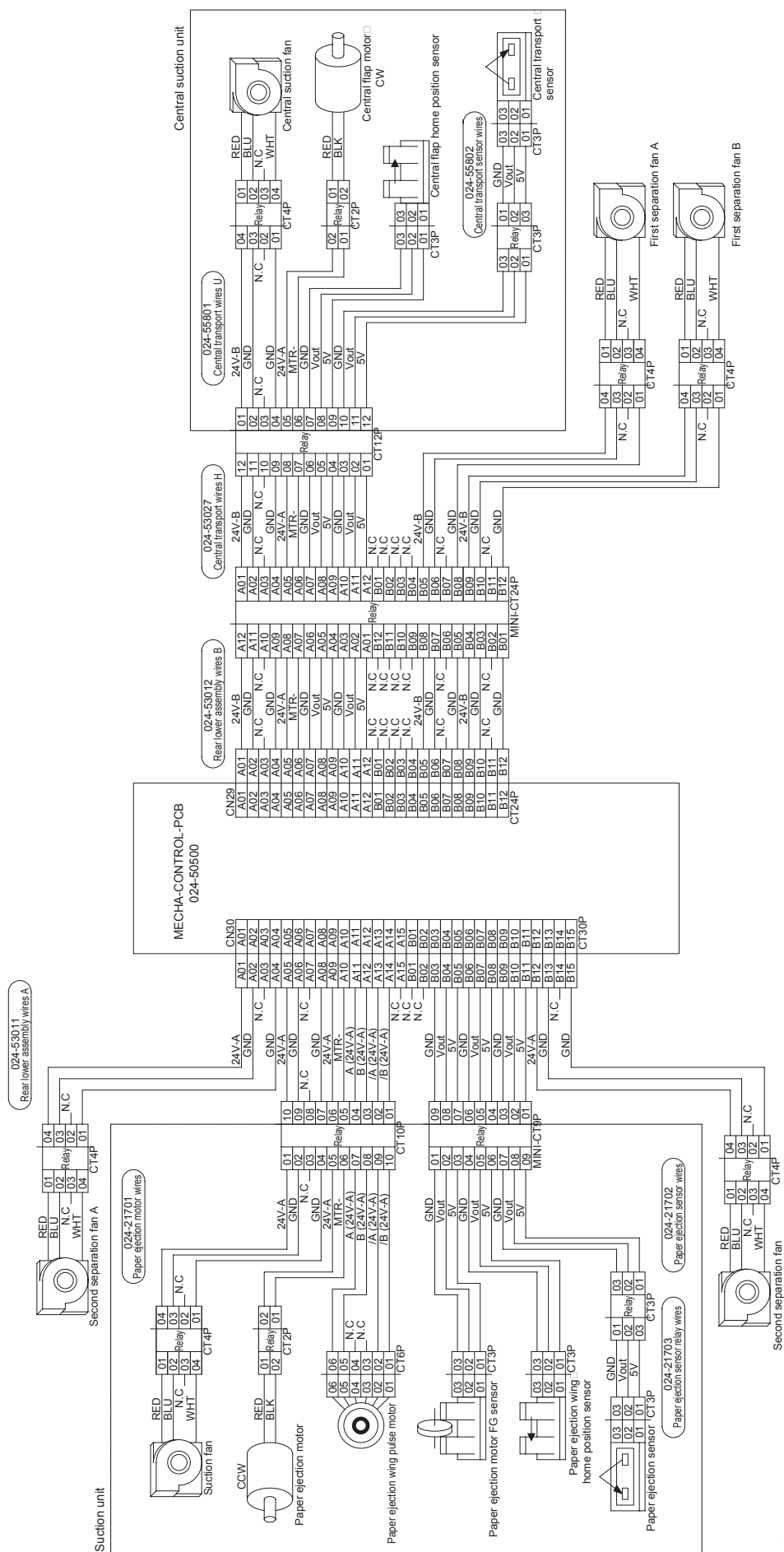


5) Paper feed section wiring diagram

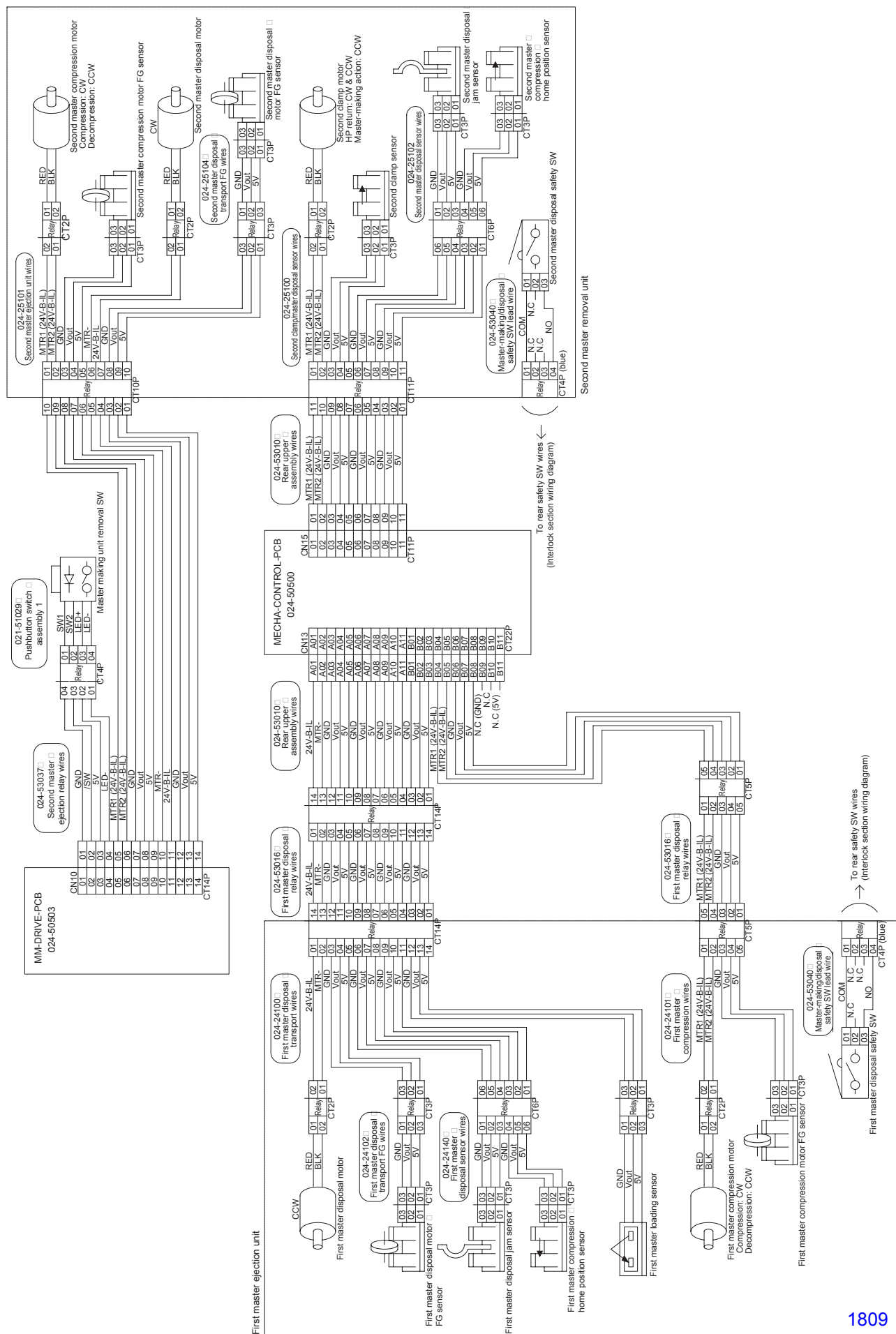


6) Image-making section wiring diagram

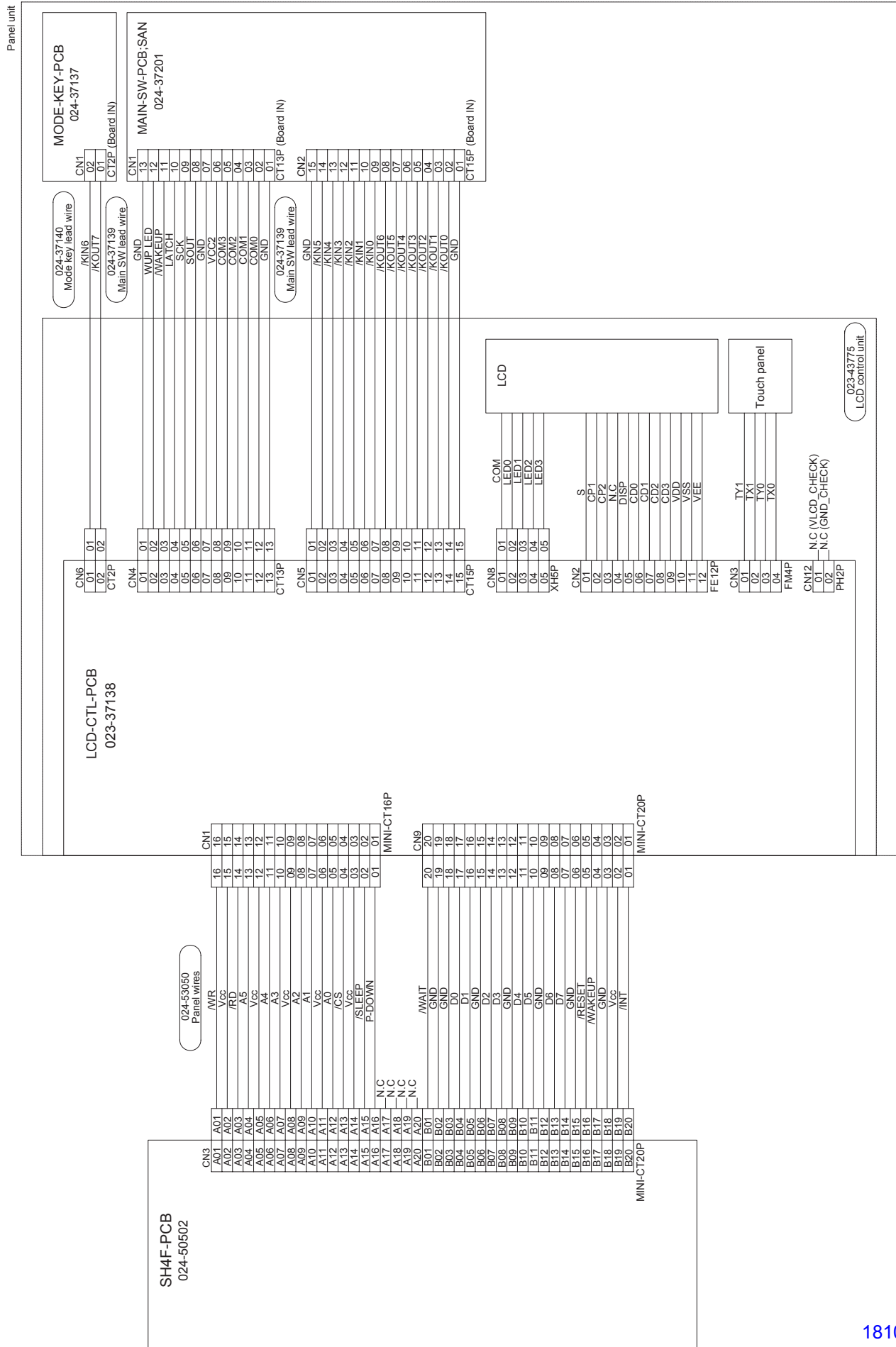




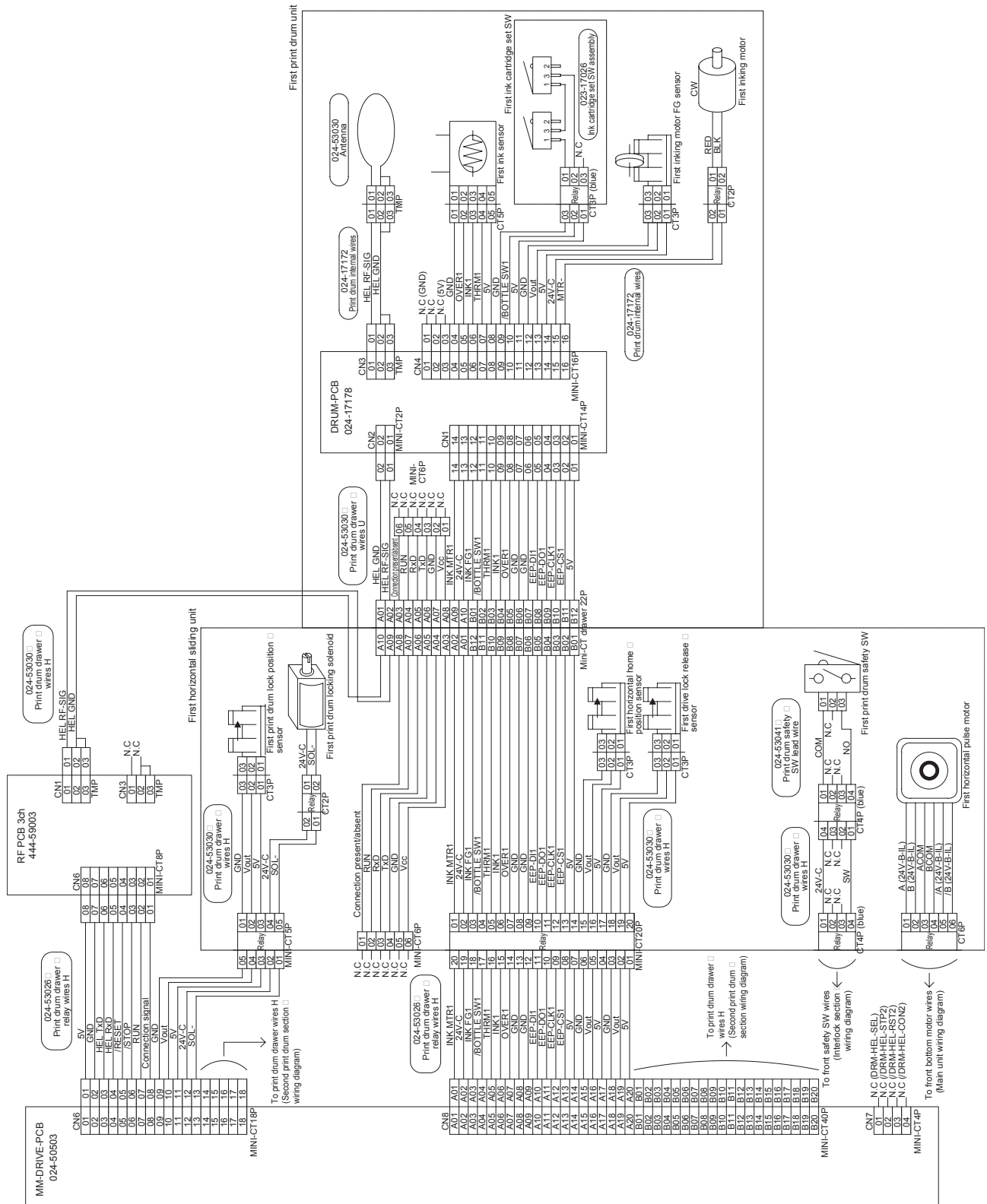
9) Master removal section wiring diagram



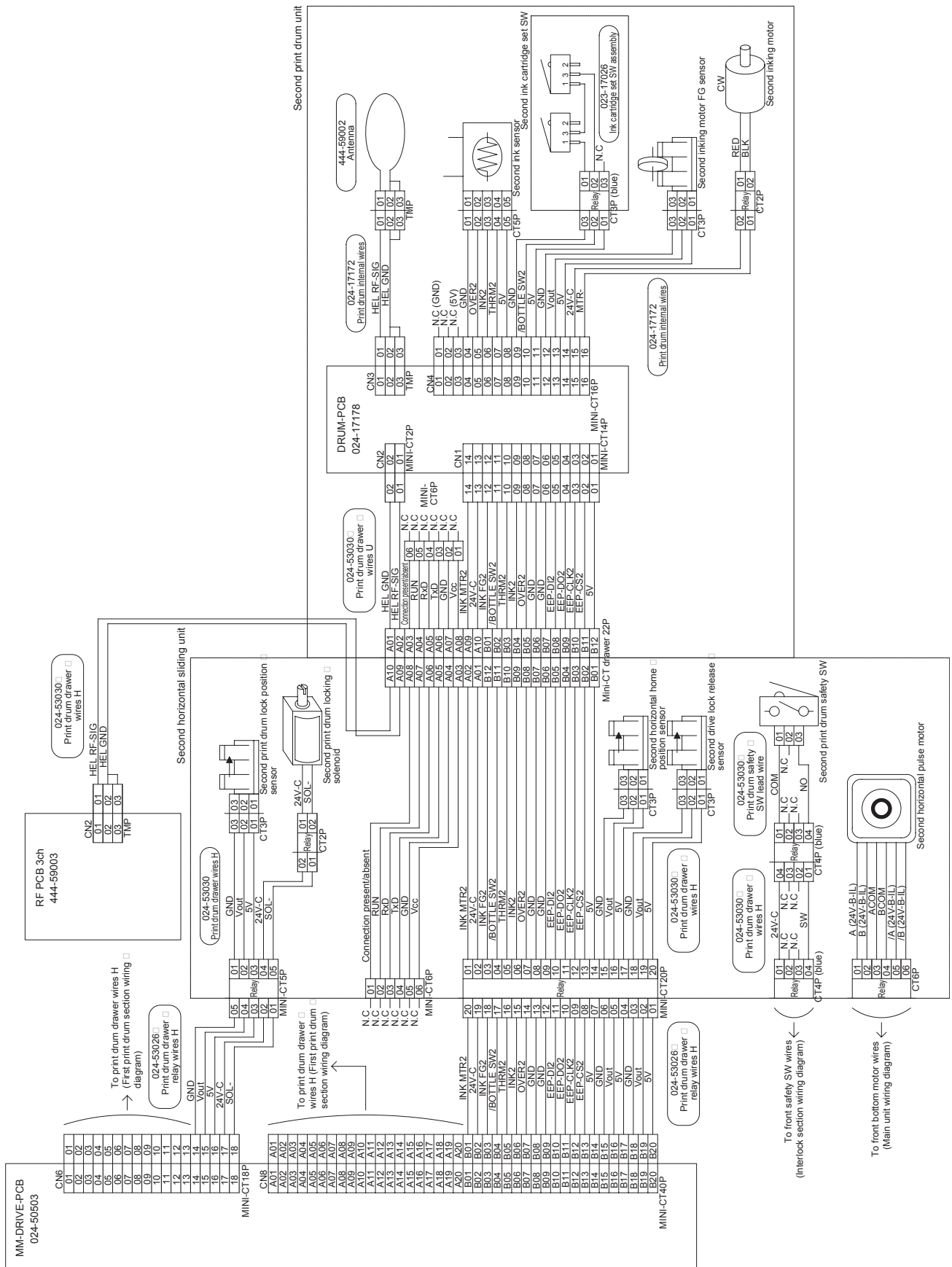
10) Panel section wiring diagram



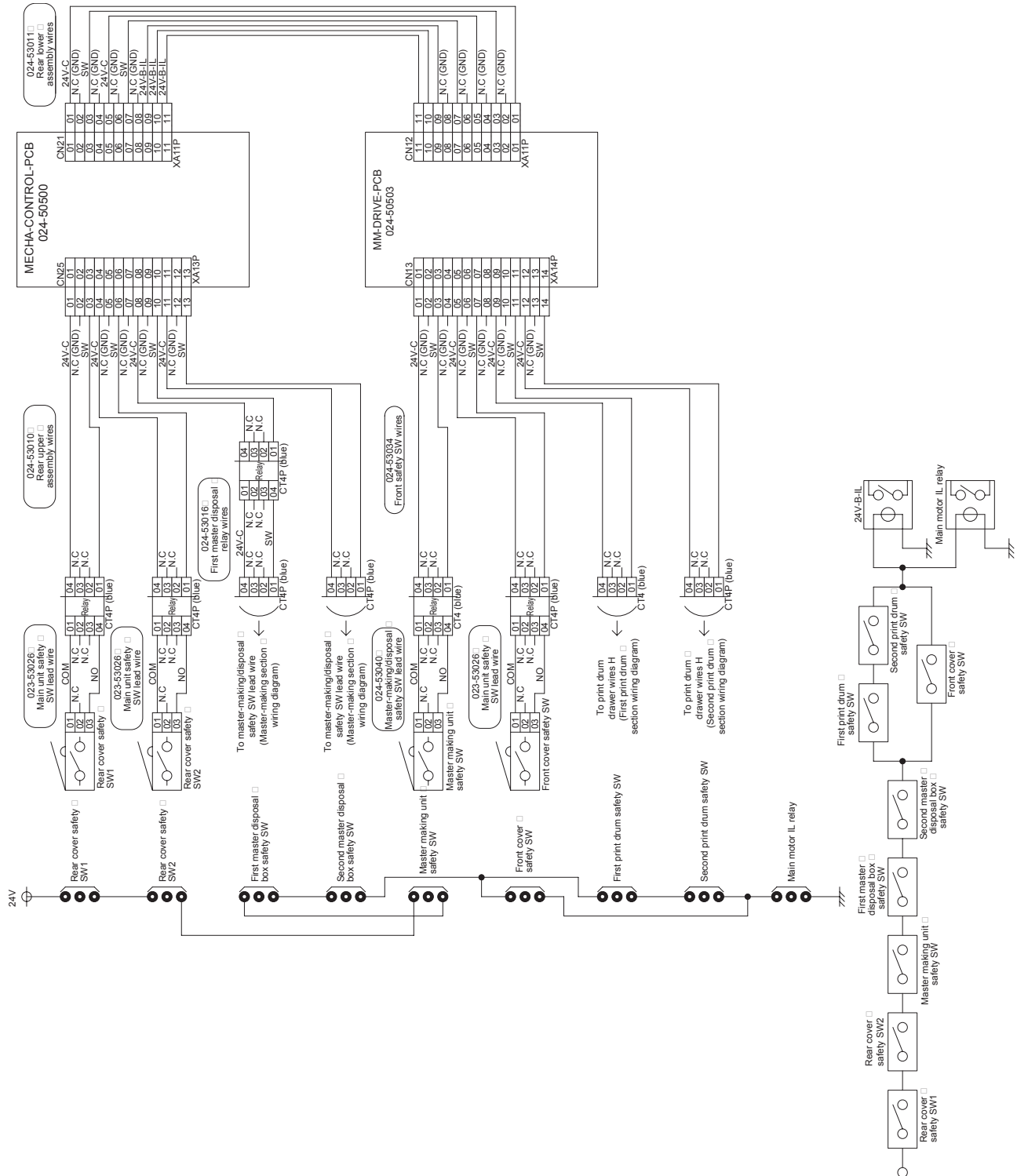
11) First print drum section wiring diagram



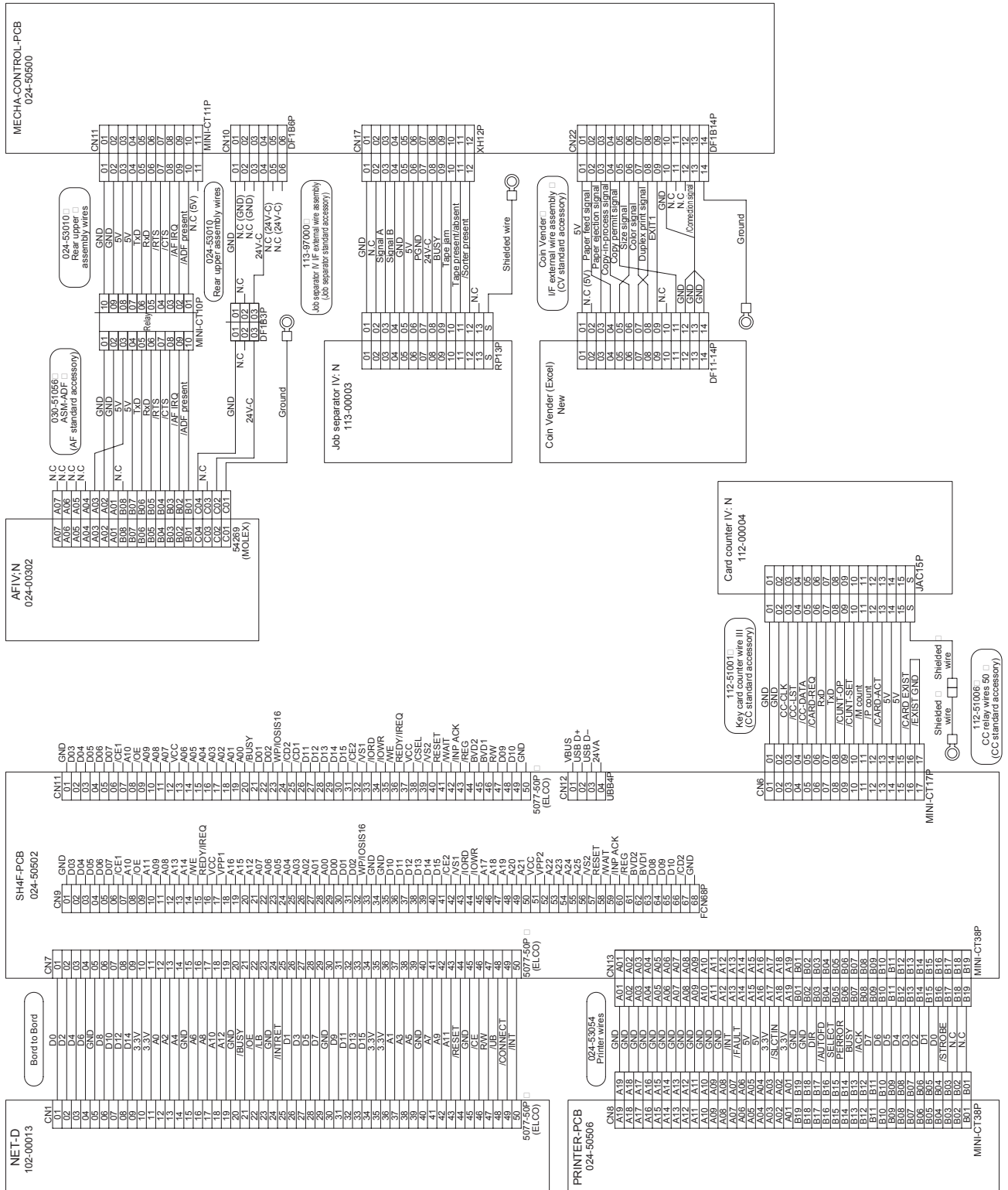
12) Second print drum section wiring diagram



13) Interlock section wiring diagram



14) Optional item wiring diagram



2. Power Supply Unit Fuse List

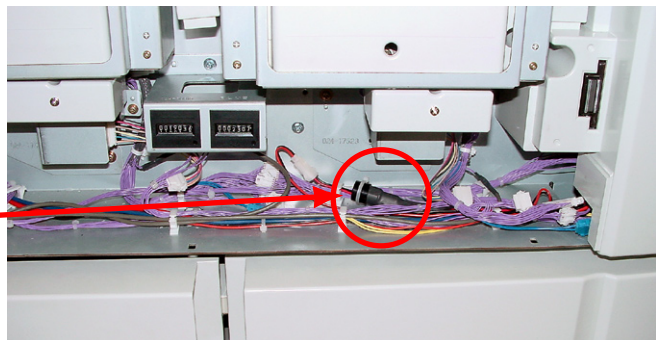
Fuse no.	System	Status after power reset	Connecting part
F1 100V 200V common 250V 10A	Primary power system	Does not turn on.	Main power supply
F3 250V 3.15A	24V-OP (option)		Not used
F4 250V 6.3A	24V-A	T98-947 24V-A does not turn ON.	Paper ejection wing pulse motor Guide roller release motor Central flap motor Paper feed reverse-rotation prevention solenoid Second separation fan A Second separation fan B Paper ejection motor Suction fan Elevator motor Paper feed clutch Scraper clutch Thermal pressure motor Scanner lamp Cutter motor Read pulse motor Load pulse motor Write pulse motor Master stocker fan
F5 250V 6.3A	24V-B	T98-948 24V-B does not turn ON.	Print-positioning pulse motor First pressure control pulse motor Second pressure control pulse motor First pressure solenoid Second pressure solenoid First separation fan A First separation fan B Central suction fan First separation pump solenoid Second separation pump solenoid Print drum brake First horizontal pulse motor Second horizontal pulse motor First master compression motor Second master compression motor First master disposal motor Second master disposal motor First clamp motor Second clamp motor Master making unit transport pulse motor

Fuse no.	System	Status after power reset	Connecting part
F6 250V 3.15A	24V-C	The error message only indicates that the Rear cover safety SW1 is off, but the cause for the trouble could be from any of the electrical parts listed on the right.	Job separator AF: N First print drum locking solenoid Second print drum locking solenoid Total counter Master counter First inking motor Second inking motor Rear cover safety SW1 Rear cover safety SW2 First master disposal box safety SW Second master disposal box safety SW Master making unit drawer cover safety SW

3. Second Paper Feed Motor Fuse List

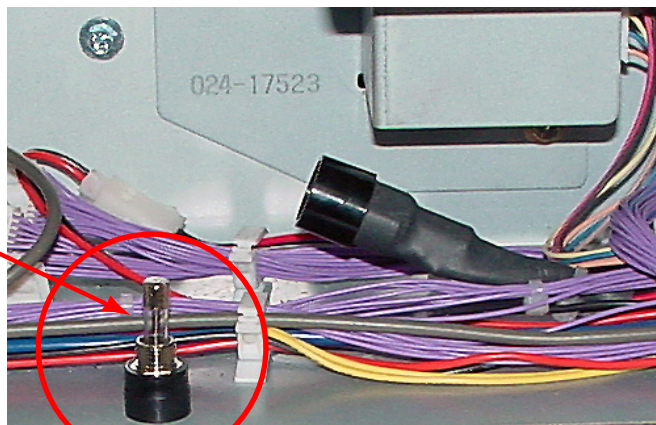
Fuse no.	System	Status after power reset	Connecting part
F10 250V 3.15A	35V	A08-410 Paper jam before the Central transport sensor. [Second paper feed motor does not operate].	Second paper feed motor

Fuse located within the black tubing located in front of the machine, under the second print drum.



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The photograph shows the cap of the tubing is unscrewed and separated from the tubing. The fuse comes out from the tubing together with the cap.



1819

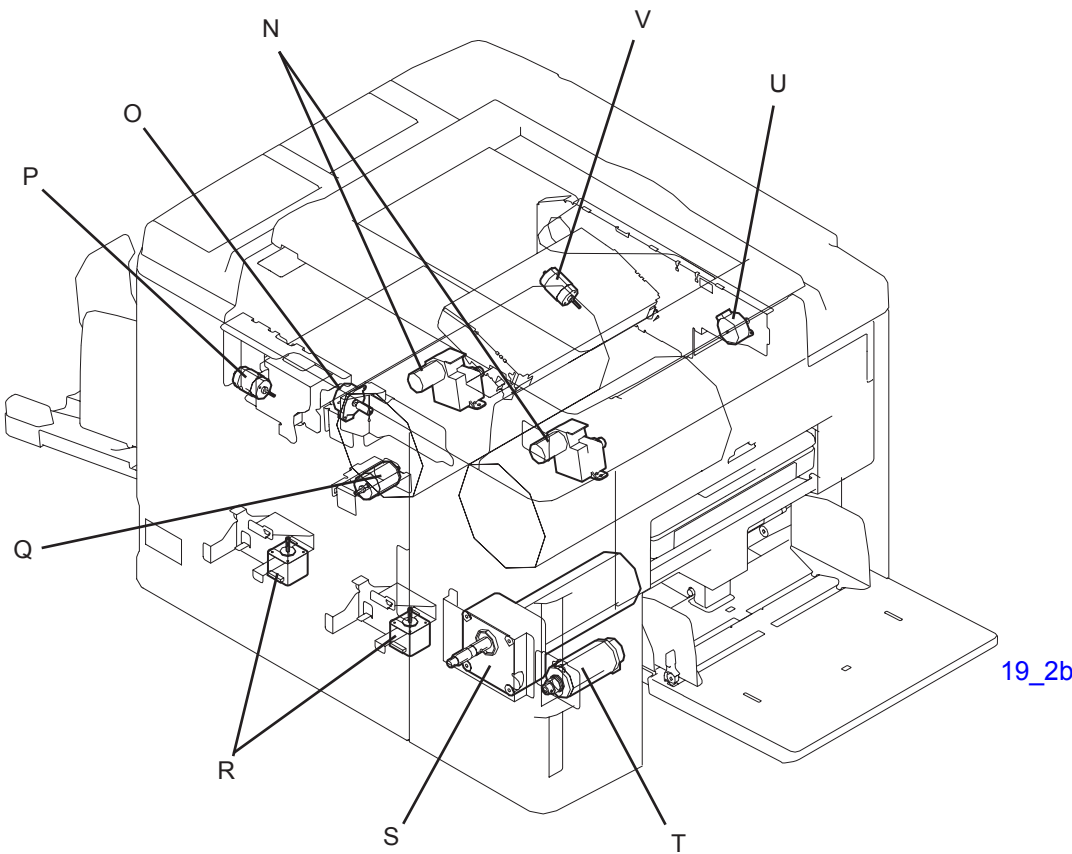
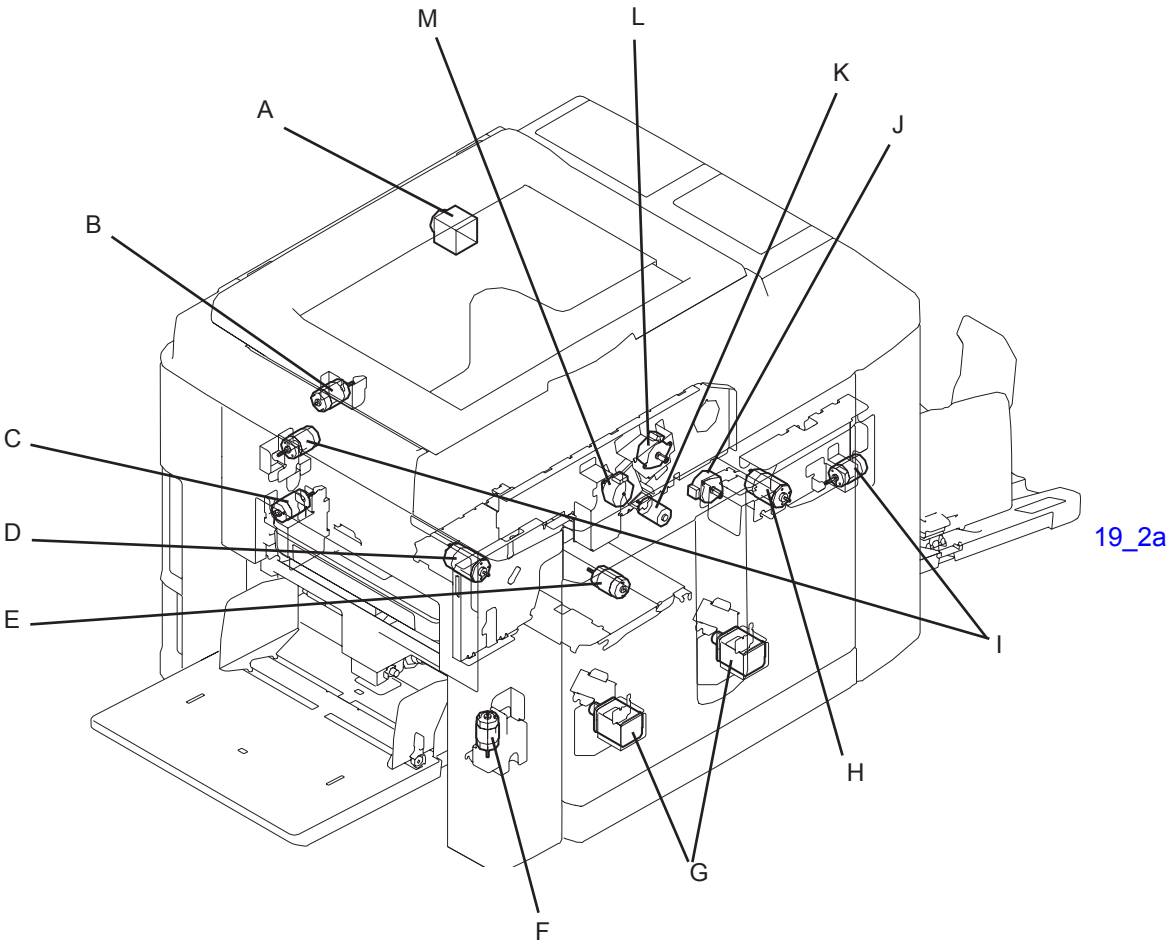
MEMO

CHAPTER 19: ELECTRICAL COMPONENTS

Contents

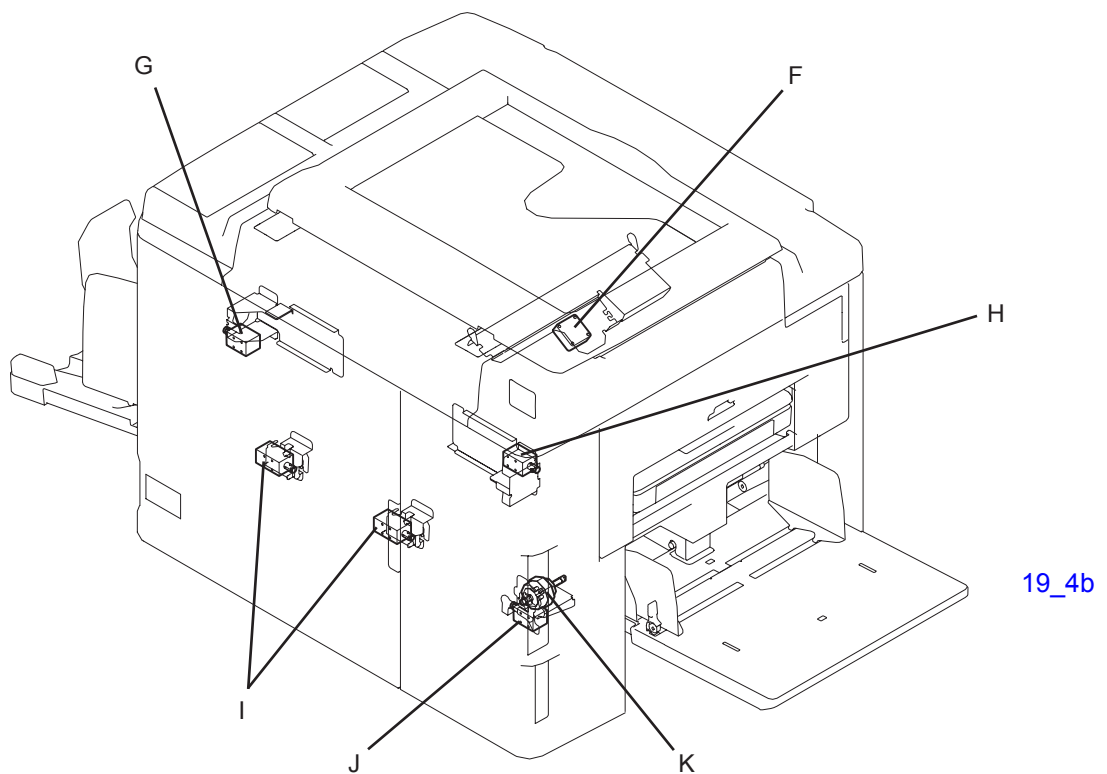
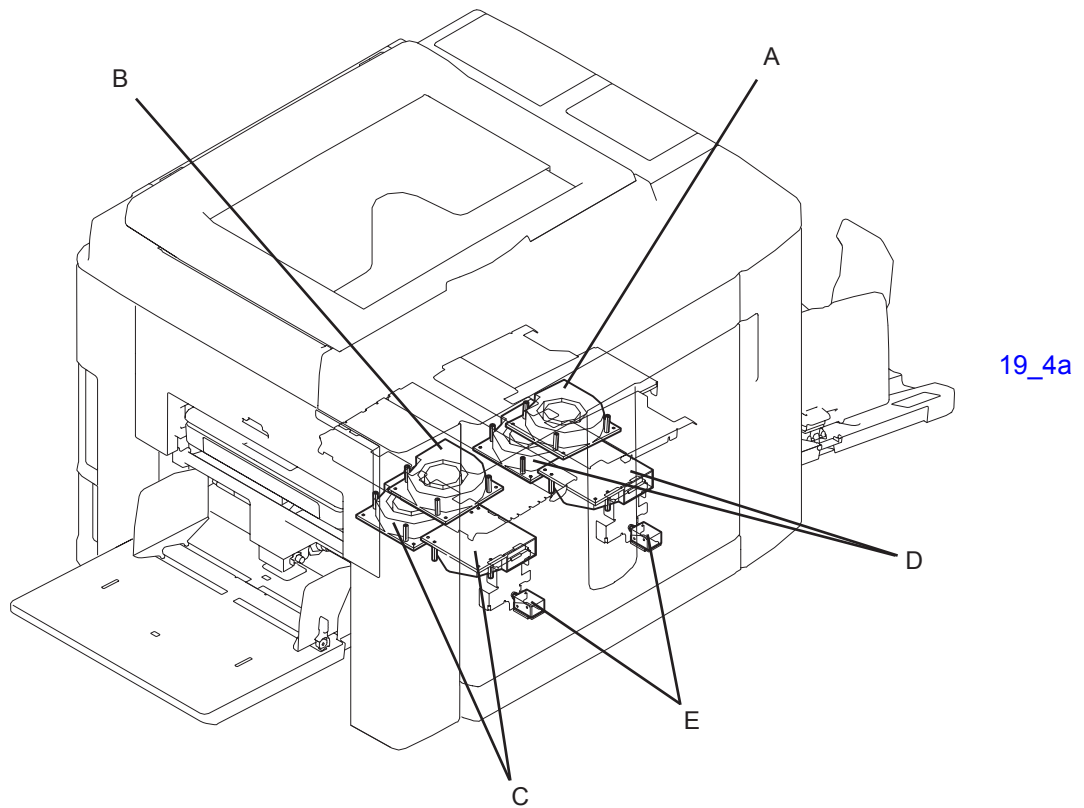
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2. Fans, Solenoids, Solenoid Clutches	19-4
3. Photoelectric Sensors	19-6
4. Other Sensors, Switches, Volume Dial	19-8
5. AF (auto-document-feeder) - Option	19-12

1) Motors



Item	Part Name	Function	Test Mode No.
A	FB read pulse motor	Moves the lamp & mirror carriages.	0284
B	First clamp motor	Drives the clamp unit.	0863 0864
C	Guide roller release motor	Releases the guide roller nip against the timing roller.	0702
D	First master disposal motor	Drives the master disposal rollers.	0470
E	Central flap motor	Elevates the central flap up & down.	0707
F	Elevator motor	Elevates the paper feed tray up & down.	0682
G	Horizontal pulse motor	Slides the print drum to change the horizontal print position.	0903
H	Second master disposal motor	Drives the master disposal rollers	0470
I	Master compression motor	Compresses the disposed masters in the master disposal box.	0493
J	Paper ejection wing pulse motor	Up & down motion of the paper ejection wings.	0666 0667
K	Cutter motor	Drives the cutter.	0480
L	Write pulse motor	Drives the write roller.	0462 0463
M	Load pulse motor	Drives the load roller and master loading roller.	0464 0465
N	Ink motor	Drives the inking pump.	-
O	Print positioning pulse motor	Controls the vertical print position.	0901
P	Second clamp motor	Drives the clamp unit.	0863 0864
Q	Paper ejection motor	Drives the suction belts.	0660
R	Pressure control pulse motor	Changes the print pressure.	0905
S	Main motor	Drives the main drive.	0861
T	Second paper feed motor	Drives the timing roller.	0663
U	Master making unit transport pulse motor	Slides the master making unit.	0483 0484
V	TPH pressure motor	Up & down motion of the TPH.	0460 0461

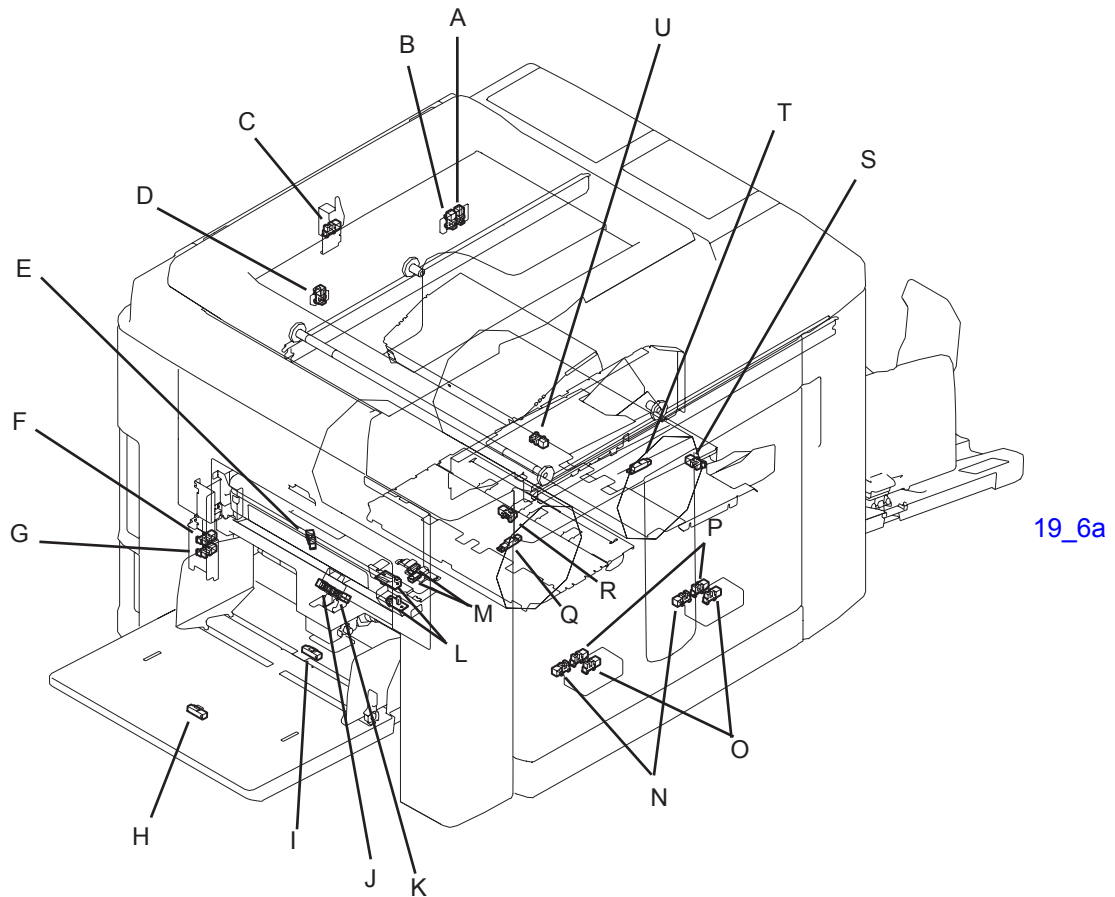
2) Fans, Solenoids, Solenoid Clutches



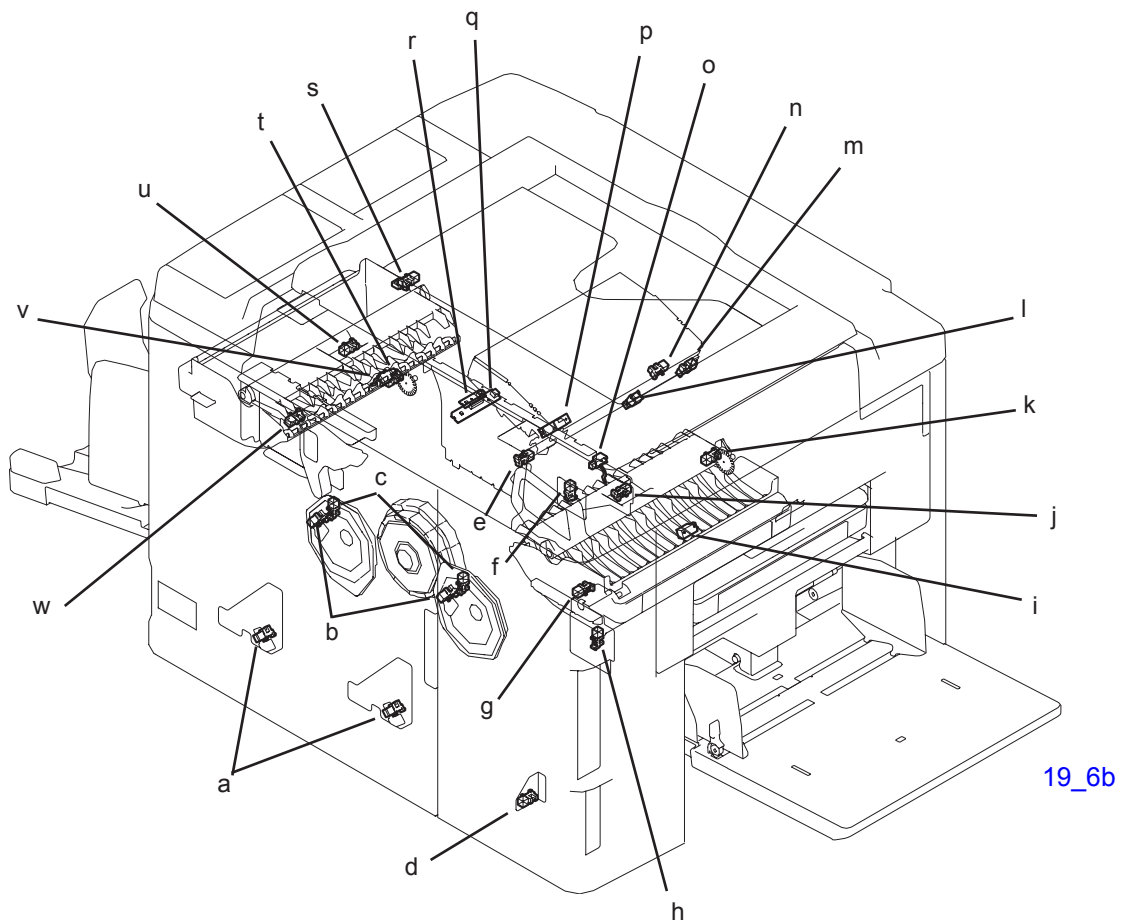
Item	Part Name	Function	Test Mode No.
A	Suction fan	Pulls the paper onto the suction belt	0661
B	Central suction fan	Pulls the paper onto the suction belt on the central transfer belt	0664
C	First separation fan	Assists paper separation from the print drum	0665
D	Second separation fan	Assists paper separation from the print drum	0662
E	Drum lock solenoid	Locks & unlocks the print drum from the machine	0885
F	Master stocker fan	Assists smooth entering of the master material into stocker area	0468
G	Second separation pump solenoid	ON/OFF of air to the separator	0684
H	First separation pump solenoid	ON/OFF of air to the separator	0684
I	Pressure solenoid	ON/OFF of pressure roller elevation	0886
J	Paper feed reverse-rotation prevention solenoid	Prevents pickup roller from rotating in reverse direction	0687
K	Paper feed clutch	ON/OFF of scraper & pickup roller rotation	0688

19_5

3) Photoelectric Sensors



19_6a



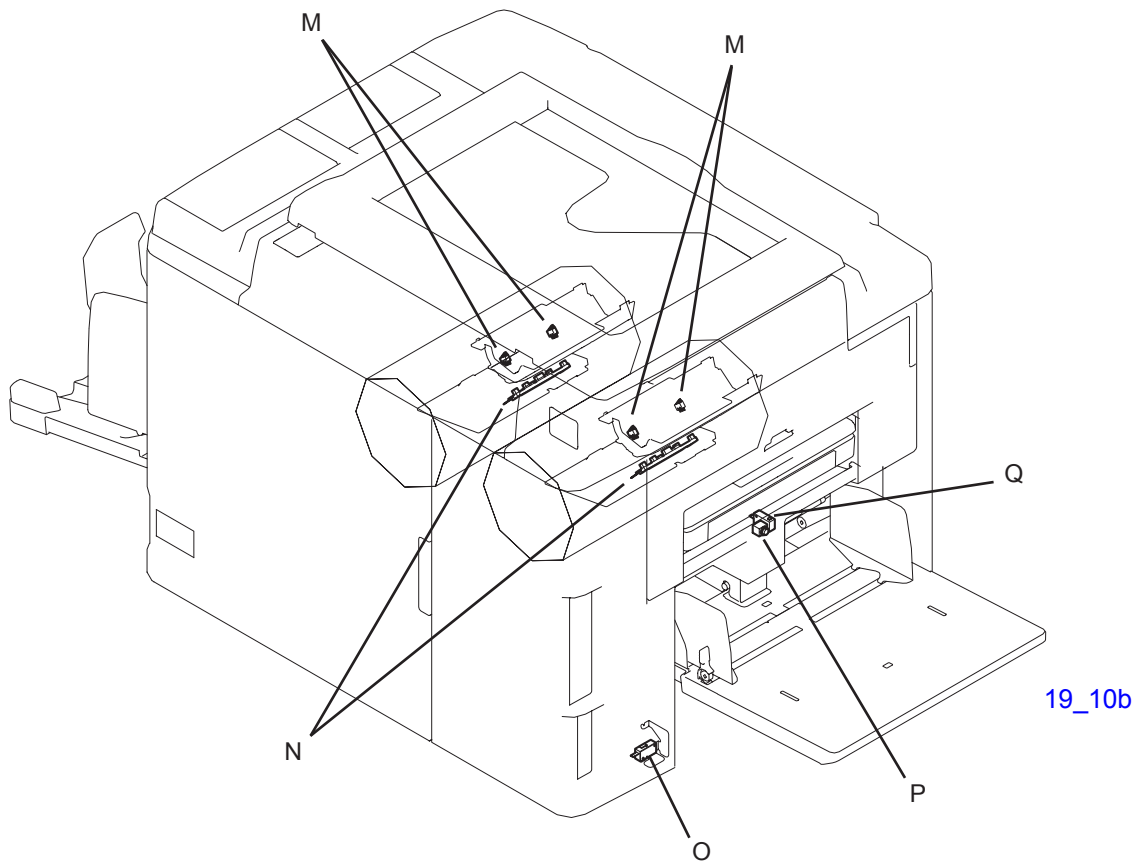
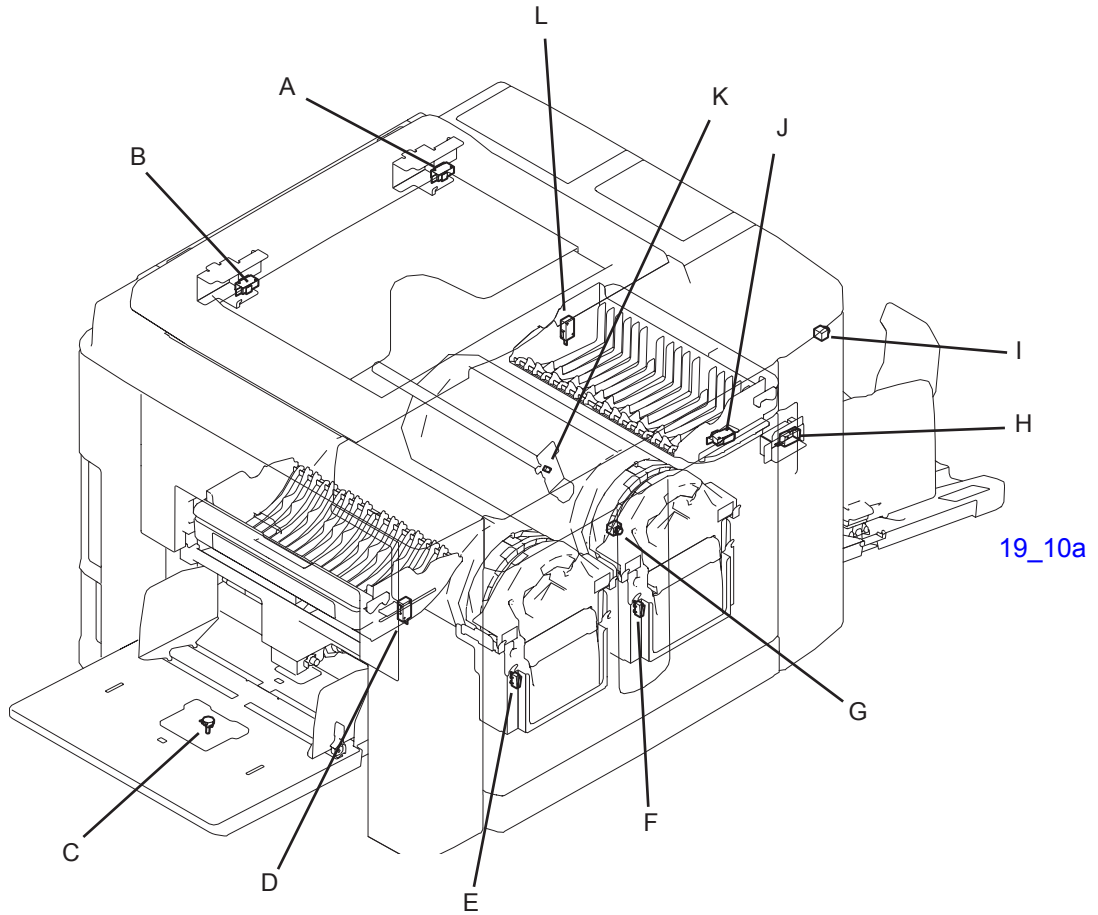
19_6b

Item	Part Name	Sensor Type	Function	Test Mode No.
A	Master-making unit pull-out position sensor	Interrupt	Detection of master-making unit pull-out position	0412
B	Master-making unit position sensor 2	Interrupt	Detection of No.2 master-making unit.	0411
C	Stage cover sensor	Interrupt	Open/Close status of stage cover	0209
D	Master-making unit position sensor 1	Interrupt	Detection of No.1 master-making unit.	0411
E	Paper-feed pressure sensor	Interrupt	Detection of paper-feed pressure lever position	0614
F	Paper volume sensor B	Interrupt	Paper remaining amount detection	0611
G	Paper volume sensor A	Interrupt	Paper remaining amount detection	0610
H	Paper size detection sensor	Reflect	Paper length detection of the paper on paper feed tray	0601
I	Paper detection sensor	Reflect	Detection of the paper on paper feed tray	0600
J	Elevator upper limit sensor A	Interrupt	Upper limit position detection of the standard paper feed tray	0602
K	Elevator upper limit sensor B	Interrupt	Upper limit position detection of the standard paper feed tray	0603
L	Paper sensor	Transmit	Detection of paper in 1st paper feeding	0605
M	Registration sensor	Transmit	Detection of the leading edge of the paper in 2nd paper feeding	0615
N	Print drum lock-position sensor	Interrupt	Detection of print drum locked in position	0807
O	Horizontal HP sensor	Interrupt	Detection of print drum horizontal position	0832
P	Drive lock release sensor	Interrupt	Detection of print drum lock release	0808
Q	Central transport sensor	Reflect	Detection on paper through the central transport area	0617
R	Central flap HP sensor	Interrupt	Detection of the central flap HP position	0620
S	Paper ejection wing HP sensor	Interrupt	Detection of paper ejection wing HP position	0618
T	Paper-ejection sensor	Interrupt	Detection of paper through the ejection area	0606
U	Paper-ejection FG sensor	Interrupt	Speed detection of the paper ejection motor	0612

Item	Part Name	Sensor Type	Function	Test Mode No.
a	Print pressure HP sensor	Interrupt	Detection of printing pressure HP position	0830
b	Print drum FG sensor	Interrupt	Detection of print drum rotation speed and print drum angle	0805
c	Position-B sensor	Interrupt	Detection of machine position-B	0801
d	Elevator lower-limit sensor	Interrupt	Detection of lower-limit position of the standard paper feed tray	0604
e	Clamp sensor A	Interrupt	Detection of the clamp unit movement	0803
f	Clamp sensor B	Interrupt	Detection of the clamp unit movement	0804
g	Master-compression FG sensor 1	Interrupt	Detection of the master-compression motor speed and angle detection of the master-compression plate	0425
h	Guide roller release HP sensor	Interrupt	Detection of guide roller HP position	0616
i	Master loading sensor 1	Reflect	Detection of master material on print drum	0806
j	Master-compression HP sensor	Interrupt	Detection of master-compression plate HP position	0421
k	Master-removal motor FG sensor 1	Interrupt	Detection of master-removal motor speed	0426
l	Master-positioning sensor	Prism	Detection of master material and master cut operation detection	0400
m	Master-making upper unit set sensor	Interrupt	Detection of master-making upper unit set position	0407
n	TPH pressure sensor	Interrupt	Detection of the TPH position	0406
o	Master-disposal-jam sensor 1	Actuator	Detection master being disposed	0420
p	Master loading sensor 2	Reflect	Detection of master on print drum	0806
q	Master detection sensor Master end sensor (send)	Transmit	Master set detection and master end detection	0401 0402
r	Master end sensor (receive)	Transmit	Master end detection	0402
s	Master-compression motor FG sensor 2	Interrupt	Detection of master-compression plate HP position	0425
t	Master-removal motor FG sensor 2	Interrupt	Detection of the master-compression motor speed and angle detection of the master-compression plate	0426
u	Master-compression HP sensor 2	Interrupt	Detection of master-compression plate HP position	0421
v	Master-disposal-jam sensor 2	Actuator	Detection master being disposed	0420
w	Second clamp sensor	Interrupt	Detection of second clamp unit movement	0803

Item	Part Name	Sensor Type	Function	Test Mode No.
	Carriage HP sensor	Interrupt	Detection of lamp carriage HP position	0200
	FB original detection sensor	Reflect	Detection of original on the scanner glass	0201
	FB original size det. sensor 1	Reflect	Detection of original size on the scanner glass	0202
	FB original size det. sensor 2	Reflect	Detection of original size on the scanner glass	0203
	FB original size det. sensor 3	Reflect	Detection of original size on the scanner glass	0204
	FB original size det. sensor 4	Reflect	Detection of original size on the scanner glass	0205
	FB original size det. sensor 5	Reflect	Detection of original size on the scanner glass	0206
	FB original size det. sensor 6	Reflect	Detection of original size on the scanner glass	0207
	FB original size det. sensor 7	Reflect	Detection of original size on the scanner glass	0208
	Second paper feed motor FG sensor	Interrupt	Detection of 2nd paper feed motor speed	0619
	Main-motor FG sensor	Interrupt	Detection of main motor speed and print drum angle	0802
	Ink pump FG sensor	Interrupt	Detection of inking motor operation	0812

4) Other Sensors, Switches, Volume Dial



Item	Part Name	Function	Test Mode No.
A	Rear cover safety switch 2	Rear cover detection and interlock safety switch	0005
B	Rear cover safety switch 1	Rear cover detection and interlock safety switch	0005
C	Paper width potentiometer	Paper width detection	-
D	First master disposal box safety switch	Set detection of the master disposal box and interlock safety switch	0423
E	No.1 print drum safety switch	Print drum set detection and interlock switch	0820
F	No.2 print drum safety switch	Print drum set detection and interlock switch	0820
G	Print drum release button	Releases print drum from the machine	0818
H	Master-making unit drawer cover safety switch	Set detection of the drawer cover of the master-making unit	0413
I	Master-making unit release button	Releases master-making unit from the machine	0410
J	Front cover safety switch	Set detection of the front cover	0821
K	Cutter HP switch	HP detection of the cutter	0403
L	Second master disposal box safety switch	Set detection of the master disposal box and interlock safety switch	0423
M	Ink bottle set switch	Set detection of ink bottle	0811
N	Ink sensor Ink overflow sensor	Detection of ink bead in the print drum and overflow detection	0809 0810
O	Paper-feed-tray lower safety switch	Compulsory OFF of elevator motor	0608
P	Paper-feed-tray elevation button	Manually lowers the paper feed tray	0609
Q	Paper-feed-tray upper safety switch	Compulsory OFF of elevator motor	0607

5) AF (auto-document-feeder) - Option

Item	Part Name	Function	Test Mode No.
	AF original registration sensor	Checks the original movement	3001
	AF original IN sensor	Checks the original movement	3002
	AF original OUT sensor	Checks the original ejection	3003
	AF original detection sensor	Set detection of the original	3004
	AF cover set switch	Set detection of the AF cover	3005
	AF original size sensor 1	Original length detection	3006
	AF original size sensor 2	Original length detection	3007
	AF read pulse motor	Drives the original transport rollers on the AF unit	3030
	AF original guide fence potentiometer	Original width detection	-

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